SWAUK PINE RESTORATION PROJECT

IMPLEMENTATION TIMELINE
INDIVIDUAL IMPLEMENTATION PLANS

2019 and BEYOND

PROJECT IMPLEMENTATION PLAN

This project implementation plan is consistent with and includes the actions necessary to implement alternative "2" of the **SWAUK PINE** Environmental Assessment. This implementation plan is meant as a living document to be added to as timber sales and restoration projects are designed and implementated using the PDF's. Those individual projects will be added to this document under a separate tab. Swauk Pine timber sale will be the first tab. Other projects will follow.

Prepared: John Agar for Shan Madden — 11/08/18
Shan H. Madden
T.M.A - Zoned
Date

Reviewed John Agar — 11/08/18
John Agar
Project Lead/Silviculturist
Date

Approved: Michelle Capp — 11/14/18
Michelle Capp
DISTRICT RANGER
Date

The Swauk Pine planning area is 6,484 acres in size. It encompasses 287 acres of private land that will not be treated, and 6,242 acres of National Forest System land that have proposed restoration objectives across the landscape. The planning area is bounded on the south and east by Williams Creek, on the north by the ridge between Lion Gulch and Hurley Creek, and on the west by the ridge between Swauk Creek and Lion Gulch.

The Swauk Pine Project Area is located approximately 10 miles northeast of the town of Cle Elum in Kittitas County, Washington. The legal location of the Project Area is as follows:

Sections 17-21 and 29-31, T. 21 N., R. 18 E.;
Sections 23-26 and 35-36 T. 21 N., R. 17 E.; and
Sections 1-2, T. 20 N., R. 17 E., W.M.

The primary purpose of the Swauk Pine Project is two-fold:

1. Improve resilience to wildfires and other disturbances by returning the forested landscape to a state that is within or closer to the historic range of variability (HRV), and
2. Improve the resilience and function of aquatic systems that have been degraded by previous and ongoing human actions (harvest, mining, road construction, and dispersed recreation).

In this context, there is a need to:

- Interrupt fire flow paths (that is, create fuelbreaks) to better protect areas of late successional forest, including current and future spotted owl habitat;
- Protect and conserve existing high value spotted owl habitat, and culture old forest multi-story (OFMS, that is, future high value habitat) on northerly slopes and valley bottoms;
- Reduce the over-abundance of small diameter dense forest (YFMS), and culture larger patches of open forest dominated by large old ponderosa pine (Old Forest Single Story-OFSS), particularly on upper and southerly slopes;
- Increase the distance between patches with moderate and high running crown fire risk by thinning;
- Restore ecological processes dependent on fire and help re-establish a mixed severity fire regime, by reintroducing fire.
  - o Where appropriate, conduct maintenance burns in areas burned by wildfire in 2012, targeting only those stands with a desired future condition (DFC) of old forest single-story (OFSS);
  - o Regenerate declining aspen stands on the north side of Dunning Meadow, using prescribed fire;
- Maintain fine-scale (within stand) structural diversity using variable density thinning techniques and retention of clumps and gaps;
- Retain all old trees as defined by Van Pelt (2008), and additional large trees as needed to meet or exceed current policy described in the 2012 Restoration Strategy.

- Reduce total amount of roadbed within Riparian Reserve;
- Remove man-made impingements to surface and subsurface flows;
- Restore large wood in existing channels to dissipate flood energy while accommodating the volume of water and debris within the existing flood prone width in order to maintain the natural sediment and flow regimes;
- In areas where streams have downcut, raise streambed;
- Increase flood stage and frequency of floodplain inundation during 2 to 10 year flood events;
- Engage side channels and floodprone areas in the valley bottom with overbank flood discharges;
- Restore baseflow conditions by improving shallow groundwater recharge within riparian areas by decompacting soils;
- Restore thermal regime where cooler shallow groundwater returns to the channel;
- Restore channel habitat complexity with increased pool formation and cover habitat;
- Restore riparian vegetation, including cottonwood communities, through restoration of floodplain processes.
- Reduce dense ladder fuels in outer fringe of the Riparian Reserves in order to protect reserves and large legacy tree structure from large scale fire.
- Remove barriers to aquatic organism (fish) passage at road stream crossings.

1. TREATMENTS

Restoration of the vegetation would occur over an area of approximately 1,252 acres. Proposed road treatments will occur across the planning area. nvasive species treatments are proposed at specific locations throughout the planning area. Riparian/stream treatments and recreation treatments are also proposed as site specific locations within the planning area.

Proposed Treatments:

Commercial Thinning (1252 acres)
This type of vegetation method is proposed in dry and mesic stands comprising 21% of the Project Area. A variable density thinning from below would be implemented, with retention of individual trees, clumps of trees, skips, and openings. The emphasis would be on retaining old trees and the appropriate numbers of large trees, snags (where operationally feasible) and down wood, as described in the 2012 Forest Restoration Strategy (Table 6 & 7) Old trees are identified from bark and form characteristics described by Van Pelt (2008). Trees slated for removal would be mostly small diameter trees. Both ground-based and skyline logging systems would be utilized in the commercial removal of timber. Ground-based logging would occur on slopes up to 35% (159 170 ac.) and skyline systems on the remaining acreage. In most skyline harvest units, cut trees would be yarded to the landing with the tops attached. There are locations where tops may be left within the unit to aid in illegal hill climb restoration efforts (see Site-Specific Restoration Actions later in this chapter). Skyline corridors and landings would be located and approved by the Forest Service prior to felling, in order to take advantage of natural openings, and to maintain desired tree clumping and to minimize additional operational tree removal. Logging may occur during any season, however, there is criteria in place to prevent unnecessary impacts, as explained later in this chapter.

In upland forest, thinning intensity and retention of clumps and complex patches would be based on the desired future condition of each stand (Table 8). Trees with mistle-toe, deformed living trees, and pockets of deciduous trees and shrubs contribute to fine scale (within stand) diversity, and provide important habitat structure for wildlife. Wherever feasible these features would be retained. Retention of snags and down wood would be emphasized in order to meet or exceed required levels for Late Successional and Riparian Reserves. Occupational Safety and Health requirements in harvest units may control where snags can be retained.

Activity Fuels Treatments
These types of treatments refer to the slash generated by logging, which can greatly increase fire risk. To reduce this risk and create a more fire-adapted forest, activity fuels in all commercial thinning areas (except the Hill Climb Restoration Area), would be treated by underburning. Some areas may require pre-treatment to protect residual trees during the underburn. Pre-treatments may include removal as firewood, and/or hand-piling and then burning piles. In the Hill-climb Restoration Area, cut tops not needed for restoration would remain on the ground as woody debris. There is a need here for a higher overall down wood retention to discourage new hill-climbs; therefore the Hill-Climb Restoration Area would not be underburned.

Underburns in thinned stands would be designed to achieve 1-5' flame lengths and incidental tree mortality of no more than 2-3 trees per acre. The desired burn pattern is a mosaic with higher tree retention on lower slopes and less tree retention of upper slopes and ridgelines. Wherever safety permits, snags would be retained before and after underburning. Burns would be designed to consume 0-3" surface fuels but retain most downed wood over 8" in diameter. Logs in advanced stages of decay (class IV and V) would not be targeted for ignition. Burning is expected to consume some of these and to reduce diameters of residual logs by 0-20%.

Burns may be conducted in spring or fall; depending on stand conditions. Fall burning is the season of choice to protect large old trees, because fine roots no longer extend into dry surface duff. For spring burning, additional measures may be considered for protection of large trees, such as pulling fuels back, pre-treating tree wells surrounded by snow, and adjusting tactics. Helicopters may be used for ignition of burns. All helicopter and chainsaw use would be subject to seasonal operating restrictions described under Required Mitigations.

After the initial underburn, a second maintenance burn would be implemented in all commercially thinned stands with a desired future condition of Old Forest Single Story, as conditions warrant.

Commercial Thinning and Underburning in Riparian Reserves (274 acres)
Most commercial thinning stands encompass some Riparian Reserve. Many riparian reserves quickly grade out of riparian vegetation type into dry forest. Riparian reserves are overstocked due to fire exclusion. Within Reserves, riparian thinning is recommended to meet aquatic objectives (NWFP ROD C-32 (c)). Objectives include:

- Thinning the fire exclusion corhort in the riparian areas so they are less prone to crown fire spread, conserving canopy closure for protection of stream temperature.
- Reduce dense ladder fuels in riparian reserves.
- Protect large legacy tree structure from stand replacement fire for protection of shade, litter, large woody debris sources.

Thinning in outer reserves is needed to create growing space and increase the recruitment of large trees in and adjacent to floodplains, thinned edges would average 40-50% crown closure after treatment. Edges between upland and riparian commercial thinning areas would be feathered to avoid creating edge. All perennial streams would have a no harvest/no equipment entry buffer of 110 feet on both sides of the stream. Outside no harvest buffers out to 150 feet from streams, tree removal would be feathered, and designed to retain at least 40% average canopy closure in the outer reserve.
Intermittent streams would be buffered as follows:

- On flatter ground adjacent to channels (<35%), a 50-ft riparian buffer with no harvest and no unmitigated equipment entry would be observed. Mitigation could include use of machinery if the use of equipment results in a lesser environmental impact, to be determined by a hydrologist or fisheries biologist. Thinning outside of this 50-ft buffer out to 150 feet, would be

feathered to provide for higher densities of tree retention in the outer Reserve, and a greater pool for large woody debris recruitment. Average post-treatment canopy closure in the outer reserve would be at or above 40%.

- For intermittent streams with steep, long and continuous side slopes (>35%) a no harvest/no unmitigated equipment buffer of 75-100 feet would be provided on both sides of the stream. Tree removal would be feathered beyond the buffer out to 150 feet from the stream, to retain at least 40% average canopy closure. Swales (ephemeral streams) may not have defined scour but often have deep soils and shallow groundwater. They are important areas for snowpack accumulation and snowmelt retention that contributes to summer baseline stream flows. Swales would be identified on sale area maps, and avoided whenever possible. Perpendicular crossing for skidding would be permitted, but swales would not be used for landings or for skidding along their lengths. Wherever possible, swales would be protected by designating them as retention clumps.

In riparian treatment areas, retention of trees with diameters at breast height (DBH) of 20" or greater and all deciduous trees and shrubs is desired. All snags and logs greater than 20" DBH would be protected from disturbance during harvest operations, to the extent practicable. Retention clumps may be designated around these structures to address safety concerns.
Under-burning treatments in riparian reserves will use passive fire, without active lighting. Fire may spread and burn into part or all of the reserves. "Backing" fire behavior is the desired tool to use, with the outcome of a mosaic pattern. Hand pre-treatment in the reserves to thin, re-arrange fuels, limb and prune trees, or pull back fuels may be used to get to the fuel loading that will produce light and moderate fire effects. Light and moderate fire effects are needed to protect shade, downed wood, snags and large trees in the riparian reserves. Hand work would be accomplished with hand tools and saws. Inner riparian reserve no treatment zones, adjacent to stream channels would be exempt from hand pre-treatment or could be approved on a site specific basis from the hydrologist or fisheries biologist if needed to meet objectives.

Thinning with Fire: Natural Fuels Underburning (2795 acres)
Thinning will be accomplished with natural fuels underburning in stands that are operationally difficult to reach, and on dry sites dominated by ponderosa pine and bitterbrush (45% of Project Area). Target areas include 436 acres in the Lion Rock Potential Wilderness Area (PWA), and 29 acres in the Lion Rock Inventoried Road Area (IRA), all of which were unburned during the 2012 Table Mountain Fire.

Outside of PWA, areas targeted for natural fuels underburning may be pre-treated by limbing to remove lower branches, thinning out trees < 8", re-arranging fuels around legacy trees, pulling back fuels and/or lopping and scattering fuels. Within PWA and IRA, there would be no cutting of trees of any size except for incidental felling of trees in association with fireline construction. Natural openings and 4WD 334 would be utilized as a burn unit boundary to minimize the need for felling trees and new fireline construction in PWA and IRA.

Planned natural fuels underburning in stands outside of PWA may be implemented in conjunction with planned underburning of activity fuels in adjacent stands. Underburning in the Lion Rock PWA would be implemented when fine fuels have recovered enough from the Table Mountain Wildfire of 2012 to once again carry fire. In PWA, the only areas targeted for natural fuels underburning are areas where the desired future condition is Old Forest Single Story (an open forest condition dominated by large old ponderosa pine). Burns would be designed for mixed severity, with expected mortality of trees at no more than 5 to 10 trees per acre with some group mortality. Mortality in the overstory may result in new openings up to ¼ acre in size. All fire killed trees would be retained as future snags unless they pose a hazard. Burns would also be designed to prevent high severity fire in riparian areas. Pre-treatment may be necessary to limit fire intensity, and may include cutting small trees and limbing lower branches. Conditions for ignition and ignition strategy would be the principle means of limiting fire intensity in Riparian Reserves. On dry bitterbrush sites the intent is to regenerate bitterbrush with a patchy mixed severity fire (low and moderate intensity). At least 30% of the bitterbrush stems would be partially burned or unburned.

Maintenance Burning
Following commercial thinning and underburning or natural fuels underburning, a second maintenance burn would be implemented in those stands with a desired future condition of Old Forest Single Story. No maintenance burning would occur in areas where the desired future condition is dense, multi-layered old forest. Subsequent maintenance burns would will be conducted as conditions warrant.

All burning would preferably take place in fall. If risks associated with fall burning are too high, burning may also be implemented in spring, as soon after snow melt as possible and preferably before deer and elk fawning/calving begin (mid-May). Burns would be ignited using helicopters and/or hand crews. To protect federally listed wildlife and nesting raptors, seasonal operating restrictions may apply to use of helicopters and chainsaws. See required mitigations at the end of this chapter. A wildlife biologist will document the need for any restrictions in burn plans.

Aspen Regeneration (18 ac)

This treatment is planned in aspen stands with conifer encroachment. Treatment would entail thinning conifers up to 10" DBH within two tree heights from declining aspen (to create a fuel bed), and/or concentrating slash around declining aspen to ensure a high intensity burn that would stimulate suckering from roots. If after treatment, fire fails to kill enough co-dominant conifers in the stand; residual conifers may be felled or girdled to maintain no more than 20% crown closure around regenerating aspen. All tree felling would be done using chainsaws. Felled trees may function as natural fencing to protect aspen sprouts. After burning, natural or man-made fences may be erected to exclude elk, deer, and sheep from the regenerating stand. Fencing would be maintained for at least 10 years.

Small Diameter Thinning with a Masticator (90 ac)
The desired future condition for these stands is Old Forest Multi-Story. They are harvest areas that were artificially regenerated to ponderosa pine, where a mix of Douglas-fir and true firs would have been more appropriate. The planted pine trees are performing poorly. Trees are too small to be commercial and too large for traditional hand-thinning and piling. They would be thinned with ground-based mastication machinery, to reduce ponderosa pine and release Douglas-fir and western larch.

Machinery used to treat these stands would be low ground pressure with less than 6 psi and capable of reaching out 20' horizontally to masticate trees. The crown closure objective is 20-30%, with clumps and gaps comprising up to 15% of the treated area. Approximately 45-60 trees per acre and some clumps of 2 to 6 trees would be retained. All existing downed wood, all standing hardwoods, and the largest available Douglas-fir, western larch, and grand fir trees would be retained. Up to 5 trees per acre may be topped to create wildlife snags. After mastication, no other fuel treatment is proposed.

Non-Commercial Thin (21 ac)
Small trees would be cut with chainsaws, then hand-piled and burned. The stand would not be underburned. Objectives are to support crown expansion and accelerate growth of residual trees, and shift species composition to Douglas-fir and western larch. Approximately 50-70 trees per acre would be retained, including some clumps of 2-6 trees. Existing logs and snags would be retained wherever possible.

Legacy Tree Protection (509 ac)
Target areas are moist mixed conifer stands where conditions are at or near the desired future condition (dense old forest with multiple layers of trees) (8% of Project Area). These stands are or will soon be habitat for the northern spotted owl. They typically contain legacy trees that are >200 years old. Legacy tree protection may preserve some future seed and shade sources should these stands burn.
Planned treatment is designed to better protect legacy trees from wildfire by re-arranging fuels. No more than two legacy trees per acre would be selected for treatment. All trees <7" DBH within 30ft of the largest legacy trees (and a smaller radius for smaller trees) would be felled and hand-piled and burned. In addition, downed woody logs within 15' of legacy trees would be bucked and pulled back from legacy trees to reduce fire residence time. Piles and material pulled away from legacy trees would be placed even with or upslope of legacy trees. Larger material would be placed perpendicular to the contour. One half of all piles would be left as prey base habitat and one half would be burned (emphasis areas along roads). All work would be done by hand. No measureable change in overstory canopy is expected because the only cut trees would be from suppressed tree strata and these trees are generally all overtopped by larger trees.

Large Wood Replenishment (226 ac)
This action would treat approximately 8 miles of stream in the Lion Gulch and Cougar Gulch subdrainages. The objective is to reconnect streams with their floodplains and halt downcutting by adding large woody habitat (LWH), that is, whole trees, logs, or bundles of logs to channels and floodplains. Wood placement would not be uniform—the sizes, amounts, orientation, and distances to the stream would vary according to site-specific restoration objectives.

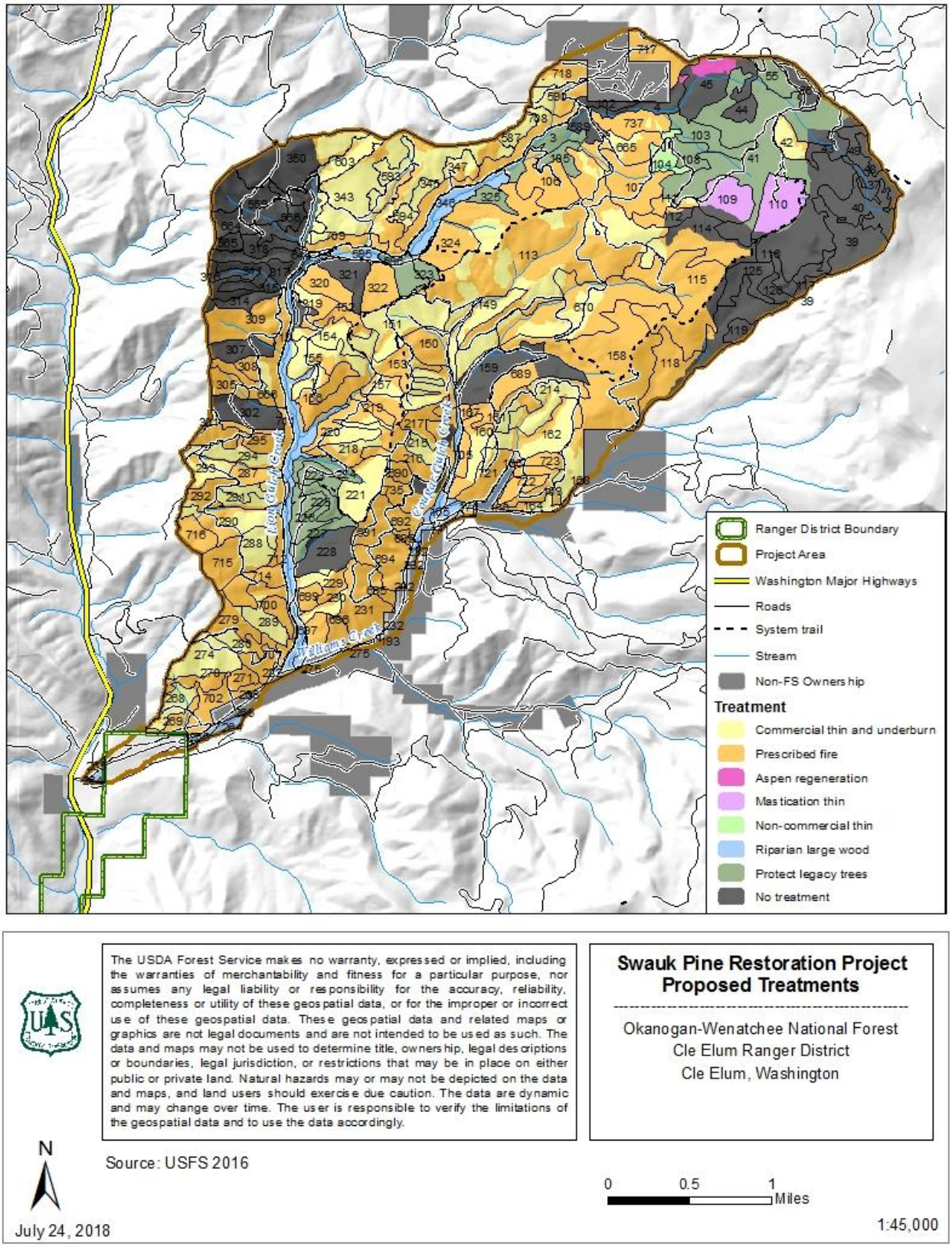
The highest priority area for placement and concentration of LWH structures is in Lion and Cougar Gulches. Other unnamed tributaries would also be treated. Additional criteria for selection of treatment areas are found in the Hydrology Specialist Report. The Washington Department of Fish and Wildlife (WDFW) Stream Habitat Restoration Guide would inform the final design and placement of LWH structures.

To acquire trees and logs for placement in streams, standing trees in the Riparian Reserve would be cut with chainsaws, tipped to retain root wads, or girdled so that they eventually fall over into the target channel or floodplain. A Forest Service silviculturist will designate these trees for removal, in collaboration with contractors and specialists to maintain a 60% crown closure within inner riparian reserves. Existing down wood may also be relocated. Because of shade requirements in riparian areas and bank stability issues, however, additional wood for instream structures can come from a variety of sources where tree removal is covered under NEPA on the Cle Elum Ranger District. Sources of wood may come off of private land when donated to the Forest Service, danger trees cut on Swauk Pine haul routes in the project area, fire killed trees off the 2012 Table Mountain Wildfire Fuelbreak (NEPA

Pending), green trees surplus to aquatic needs within the Swauk Pine project area in adjacent riparian areas, danger or hazard tree removal projects across the ranger district, or trees removed to facilitate safe burning operations.

Wood placement could employ machinery in the riparian areas, seasonality would be limited to July 16- October 3, and December 15-March 1 depending on snow cover. The intent is to use machinery when potential for soil compaction and displacement is low, consultation with a Forest Service soil scientist will occur before wood placement occurs. Wood placement will be planned and designed to minimize migration onto private land, be mindful and un-impactful to active mining claims, and would not would re-direct water onto roads. Fifteen discrete log jams (wood replenishment sites) are planned, these areas could receive approximately 36 logs per jam, with an additional ~70 logs placed in the surrounding acre. In addition, dispersed wood will be distributed through approximately 8 miles of stream throughout the project area, at an average density of 8.2 pieces/ 100' of stream. A riparian wood implementation plan is available in the project record.
Wood placement will be phased over time, and continuously coordinated with district sale administrators, fuels specialists, presale department, engineering, silviculture, and minerals/mining activities. Work will be phased and concentrated in locations and timing to minimize public disturbance. Labor source to do the work could be contractors, collaborators, or volunteers; funding sources have been identified but completion of the work will depend on availability of funds.
Additional trees may be acquired from upland areas that are adjacent to roads and slated for natural fuels underburning. Potential trees would be collected for transport with a self-loader or pulled to the road with cables. The intent is to minimize ground disturbance in the source stand. Single trees or clumps of trees may be removed, as long as all other objectives (canopy closure, retention of old and large trees, retention of snags, protection of sensitive sites, down wood requirements) are met in the source stand. A Forest Service representative would review and approve all tree removal from upland stands for use in Riparian Reserve. Tree removal may occur before and after underburning.
Trees cut within or transported to the Reserve would be maneuvered and placed using a variety of techniques (grip hoist, portable yarder, winches, cable systems, small tractor and/or small tracked excavator). Tractors and excavators would remain on roads and other previously impacted areas unless Forest Service personnel determine that they can travel off-road in a manner that would not impact water quality or affect hydrologic functions. No road construction or removal of riparian vegetation would be allowed, although some damage to understory vegetation is expected. Equipment may be "walked in" on well vegetated routes utilizing existing openings wherever possible. Brush mats (limbs) would be placed where needed to protect soils.

Equipment operation in the Reserves may be suspended for the duration of the fall/winter season as conditions would be monitored and assessed seasonally and decisions for shutdown would be at Forest Service discretion. Equipment tracks and any created openings would be restored through a combination of light surface soil scarification, scattering of coarse woody debris across disturbed ground, and where needed, revegetation with native species prescribed by the District Botanist.
Wood would generally not be anchored as some movement within the channel and floodplain is desirable. Some alteration/excavation of streambanks may be necessary to "embed" a section of a log into the bank. At locations of severe channel incision where both banks are "high", it may be necessary to excavate into one bank to install a log structure.



The USDA Forest Service makes no warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, nor assumes any legal liability or responsibility for the accuracy, reliability, completeness or utility of these geospatial data, or for the improper or incorrect use of these geospatial data. These geospatial data and related maps or graphics are not legal documents and are not intended to be used as such. The data and maps may not be used to determine title, ownership, legal descriptions or boundaries, legal jurisdiction, or restrictions that may be in place on either public or private land. Natural hazards may or may not be depicted on the data and maps, and land users should exercise due caution. The data are dynamic and may change over time. The user is responsible to verify the limitations of the geospatial data and to use the data accordingly.

Swauk Pine Restoration Project
Proposed Treatments

Okanogan-Wenatchee National Forest
Cle Elum Ranger District
Cle Elum, Washington

N

Source: USFS 2016

0 0.5 1 Miles

July 24, 2018

1:45,000

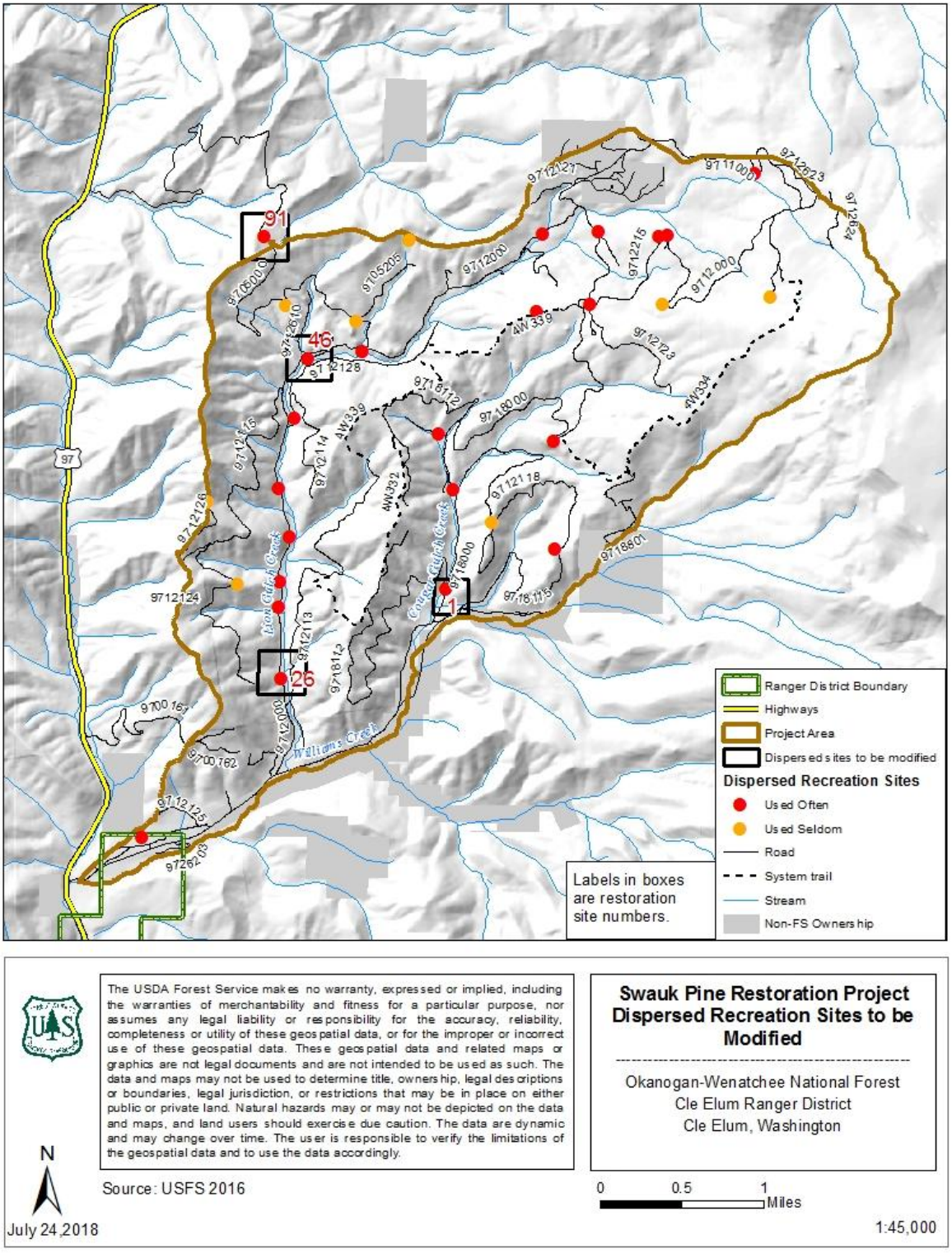
Proposed vegetation treatments

Aquatic Restoration

Aquatic restoration actions are proposed at 59 sites (Figures 1 & 2). Actions fall into 4 categories, as follows:

- Actions that would restore degraded riparian soils, vegetation, and wetlands by confining dispersed recreation use and rehabilitating overused areas. Boulders would be embedded to define acceptable areas of use. Soils would decompacted up to a depth of 18 inches, and barren areas replanted with native species. Large wood would be strategically placed to block user-built trails and support revegetation efforts. Site-specific objectives include:

    - Site 26: Lion Gulch: Retain parking on shoulder of FS Rd 9712000 and close the unauthorized 100-ft spur to motorized use. Users may walk in to the campsite.
    - Site 46: Lion Gulch: Reduce campsite footprint by half. Designate an access route and provide/define parking for up to 5 vehicles. Close and restore the unauthorized motorized trail crossing over Lion Gulch.
    - Site 91: Durst Creek: Decommission unauthorized road going out the ridgetop, beyond the existing dispersed campsite. Retain existing access between FS Rd 9705000 and campsite.
    - Site 1: Cougar Gulch: Reduce size of dispersed site by one-third due to compaction and damage to vegetation in riparian zone. Designate an access route from FS Rd 9718000.
    - Proposed road decommissioning would limit motorized access to 5 other dispersed recreation sites in-order to improve aquatic conditions. Users may still walk in to these sites.
- Actions that would restore degraded channel conditions and aquatic habitat, including:
    - Addition of large wood to streams and floodplains (15 specific sites). For methodology, see previous description of the Large Wood Replenishment Treatment.
    - Removing fill associated with old skid trails and railroad beds and unauthorized dams and diversions that are barriers to overbank flooding (4 sites in Lion Gulch, and 3 in Cougar Gulch and Billy Goat Gulch).
- Actions that would restore fish passage, by replacing or modifying road culverts (14 sites).



The USDA Forest Service makes no warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, nor assumes any legal liability or responsibility for the accuracy, reliability, completeness or utility of these geospatial data, or for the improper or incorrect use of these geospatial data. These geospatial data and related maps or graphics are not legal documents and are not intended to be used as such. The data and maps may not be used to determine title, ownership, legal descriptions or boundaries, legal jurisdiction, or restrictions that may be in place on either public or private land. Natural hazards may or may not be depicted on the data and maps, and land users should exercise due caution. The data are dynamic and may change over time. The user is responsible to verify the limitations of the geospatial data and to use the data accordingly.

Swauk Pine Restoration Project
Dispersed Recreation Sites to be Modified

Okanogan-Wenatchee National Forest
Cle Elum Ranger District
Cle Elum, Washington

N

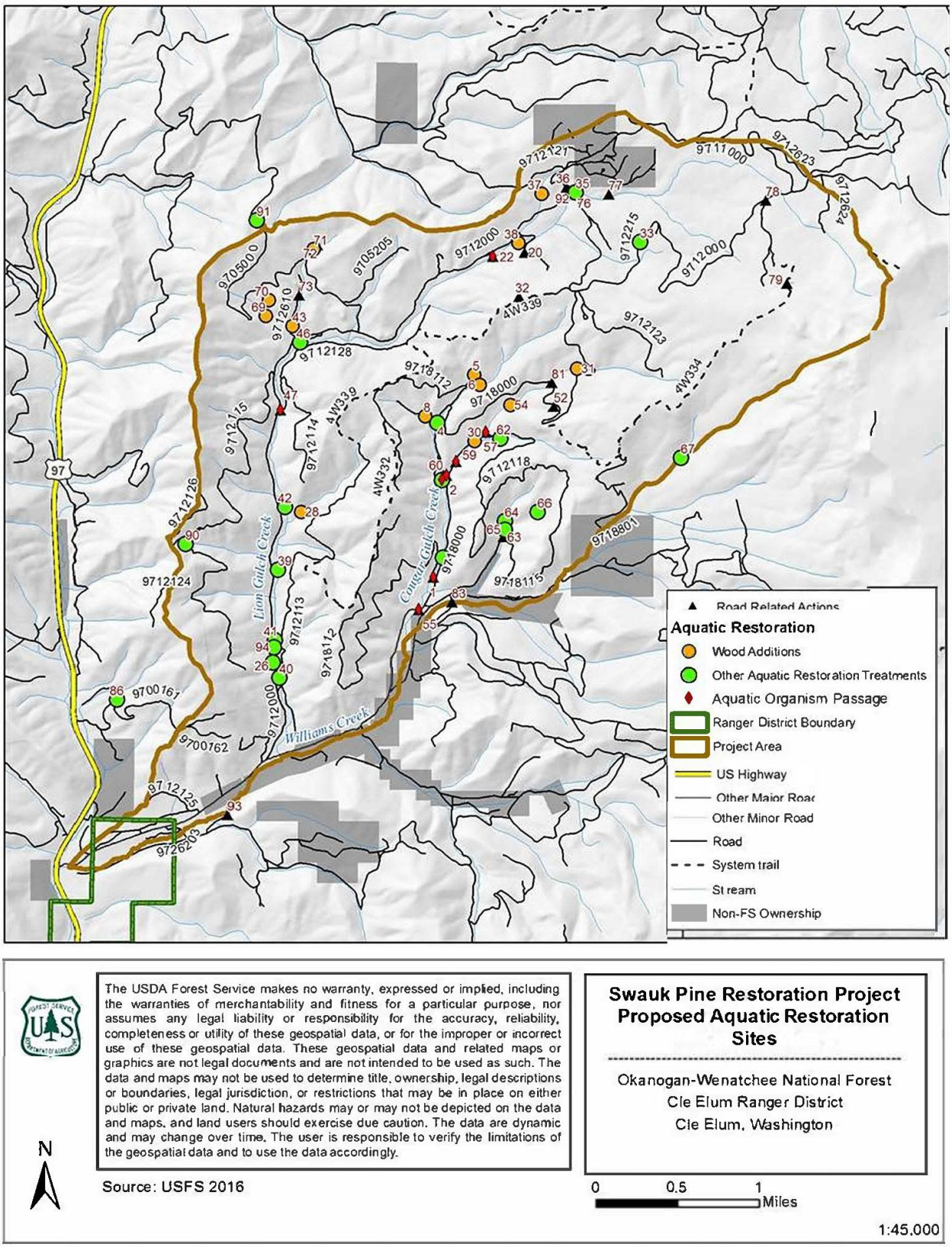
Source: USFS 2016

0 0.5 1 Miles

July 24,2018

1:45,000

Figure 1: Dispersed Recreation Sites to be Modified



The USDA Forest Service makes no warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, nor assumes any legal liability or responsibility for the accuracy, reliability, completeness or utility of these geospatial data, or for the improper or incorrect use of these geospatial data. These geospatial data and related maps or graphics are not legal documents and are not intended to be used as such. The data and maps may not be used to determine title, ownership, legal descriptions or boundaries, legal jurisdiction, or restrictions that may be in place on either public or private land. Natural hazards may or may not be depicted on the data and maps, and land users should exercise due caution. The data are dynamic and may change over time. The user is responsible to verify the limitations of the geospatial data and to use the data accordingly.

Source: USFS 2016

Swauk Pine Restoration Project
Proposed Aquatic Restoration Sites

Okanogan-Wenatchee National Forest
Cle Elum Ranger District
Cle Elum, Washington

N

0 0.5 1 Miles

1:45,000

Figure 2: Proposed Aquatic Restoration Sites

Tree Planting
In four ponderosa pine plantations (stands 320, 322, 324 and 106) that are proposed to be jackpot burned, an appropriate mix of species would be planted (40 to 80 trees per acre) in newly created openings.

Haul Routes
Proposed timber harvest would require use of existing open and closed system roads and temporary roads (Figure 3). Temporary roads would entail either new construction or reconstruction and use of existing unauthorized roads. All temporary roads would be decommissioned as part of the timber sale contract. All temporary roads would remain closed to public use during harvest operations. They may be briefly opened immediately after harvest to allow public firewood removal prior to underburning.

Hazard and danger trees along haul routes will be felled to mitigate safety concerns and meet OSHA safety requirements. Treatments would cover 46.3 miles of haul route.

Road decommissioning would conform to standards described in Forest Roads Policy and Forest Service Best Management practices for Water Quality.

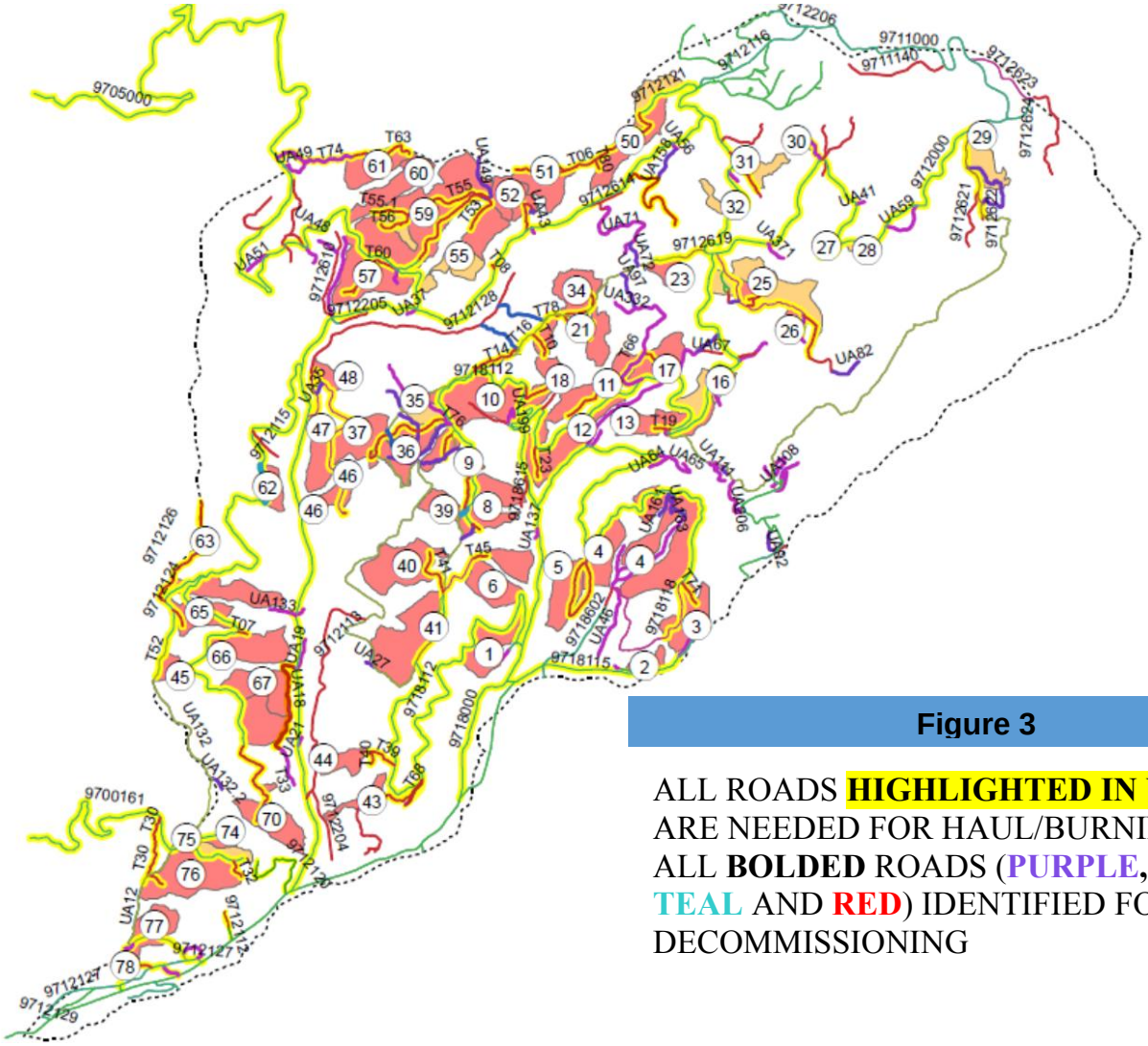


Figure 3

ALL ROADS **HIGHLIGHTED IN YELLOW** ARE NEEDED FOR HAUL/BURNING
ALL **BOLDED** ROADS (**PURPLE**, **PINK**, **TEAL** AND **RED**) IDENTIFIED FOR DECOMMISSIONING

Prevention and Control of Invasive Plants
A fully integrated weed control strategy would be implemented to control existing noxious weed populations and prevent weed encroachment into areas that are currently weed-free. This strategy would be multi-phased over time and would utilize one or more of the following treatment methods:

- prevention (seeding or planting with desirable species and mulching heavily disturbed areas, cleaning equipment before arrival at Project Areas; post-project monitoring to determine if noxious weed treatment is necessary).
- manual control (hand-pulling or grubbing with hand tools).
- mechanical control (mowing or clipping).
- cultural control (seeding and/or planting with desirable species).
- chemical control (spot treatment of invasive plant species using a truck or ATV-mounted sprayer and hand-held nozzle. Wheeled vehicles would remain at all times on existing roads or skidtrails.
    - The herbicides used would be picloram (Tordon 22K®) or glyphosate (e.g. the aquatic formulation of Glypro or Aquamaster), depending on the target invasive plant species and its proximity to water. Where a surfactant is needed to increase the efficiency of the herbicide, the surfactant would be Agri-Dex®).

Prevention is always the preferred method for dealing with weeds. As prevention and initial control treatments with herbicides are implemented and weed populations decline, herbicide treatment would ultimately be replaced with manual, mechanical and cultural methods described above. Herbicides would be used where other methods have been found to be ineffective or are not feasible.

The area targeted for monitoring and treatment of weeds would include all roadsides in the Project Area (roads open and closed; however, truck- or ATV-mounted sprayers would only be used on open roads. Backpack sprayers would be used on all closed roads). Haul routes, landings, skidtrails, treatment areas (harvest and natural fuels burn areas), obliterated roads, and known weed populations would also be monitored and treated. We expect to treat between 50 to 300 acres of invasive plant infestations with herbicides, annually for the life of the project (potentially, a 15-20-year span). Herbicide treatments would begin prior to harvest, and end one year after the first follow-up maintenance burn.

Danger Tree Management
Danger tree management would be implemented along all haul routes (approximately 46 miles of road total); Outside of harvest areas, trees within a distance of 1.5 times tree height from roads would be assessed using standard protocols, and if considered dangerous, would be felled and left on site, or used for wood restoration projects. Approximately 1100 acres of roadside forest outside of harvest units would be subject to danger tree management.

Danger tree felling along temporary roads would occur at the discretion of the purchaser, and felled trees (outside of harvest areas) would be left on site.

Firewood removal in LSR is limited to decks and areas where desired leave trees have been marked for retention by a Silviculturist. In Riparian Reserves, felled danger trees may be signed for retention by the Forest Service, to meet Forest Plan down wood retention standards. In riparian areas, any felled danger trees in excess of standards would be made available for other restoration needs, such as LWH replenishment. In most places, danger tree management would take place as needed, at any time of year. However, danger tree management within ¼ mi of nesting spotted owls would be restricted to the non-nesting period (before March 1 or after August 31).

Fireline Construction
Proposed burning would require construction of fireline by hand (approximately 1.3 miles total), adjacent to private lands. To the maximum extent possible, natural and man-made openings (such as roads), snow, and rock features would be utilized as burn unit boundaries. Mop-up operations would include rapid closure and restoration of constructed firelines, especially near Forest roads and trails. Fireline restoration would entail installation of drainage features, seeding with native grasses and forbs or non-persistent non-native grasses, and placing logs and other woody material across to roughen the surface, help slow surface runoff, and prevent from being used as motorized trails.

Road Decommissioning
The objective of road decommissioning is to return the unneeded road to a more natural state. Decommissioning is accomplished using techniques intended to transform the road area from a facility to productive Forest land. Approximately 7.8 miles of Forest Service System Maintenance Level 1 and 2 are proposed for decommissioning and increase Forest Sytem trails by 3.03 miles. Closure of a 1.33 mile currently open system road is proposed. An additional 8.9 miles of unauthorized roads (roads existing on the landscape, but not authorized in the forest transportation system) are proposed for decommissioning. Actions to achieve this typically include:

- De-compact the road prism.
- Re-contour all or part of the road prism to re-establish drainage patterns that move stormwater across the road scar rather than along its' length. Road prism re-contouring would also be designed to prevent runoff from immediately entering adjacent streams.
- Remove culverts.
- Remove stream crossing road fill and re-contouring and revegetating the streambanks.
- Construct waterbars.
- Construct earthen barricades.
- Armor overflow and outflow channels to reduce resource damage.
- Control erosion.
- Seed and mulch to promote vegetative revegetation.

Road Closure (Storage)
The objective of road storage is to completely eliminate motorized vehicle use and put a road into a state of restored hydrologic function which minimizes the need for road maintenance. Approximately 1.33 miles of Forest Service System Maintenance Level 1 and 2 roads will be closured. The techniques used to attain storage will be tailored to fit the site conditions on each particular segment of road. Road storage actions include:

- De-compacting and shaping the road prism to a stable condition that promotes vegetative recruitment.
- Removing stream crossing culverts and associated fill material that present an unacceptable risk of failure and restoring the natural valley profile.
- Scattering large wood debris on the road prism.
- Constructing water bars to prevent water from running along the road surface at intervals appropriate to site conditions. Scarifying the road surface and seeding with grasses and forbs.
- Re-contouring minimal portions of fill slopes to fill road ditch lines.
- Re-contouring the beginning 100 feet of road and use woody debris and vegetation to obscure the road entrance and increase effectiveness of the motorized closure or constructing earthen barricades.

Structural Upgrades on Forest Service System Roads
The objective of implementing structural improvements on Forest roads is to reduce runoff and road surface generated sediment delivery to streams in the project area.to Approximately 140.64 miles of Forest Service System Roads (Maintenance Levels 1-2) were proposed for structural upgrades. Structural upgrades include:

- Re-establishing drainage ditches.
- Increasing the size and frequency of ditch relief drain structures.
- Re-conditioning the road surface to the appropriate shape and restoring road crowns to standard.
- Road grading
- Placing or replacing of surface aggregate.

Temporary Road Construction
Up to 9 miles of temporary road could be constructed to facilitate the removal of commercial timber. After harvest activities are complete, all temporary roads constructed would be decommissioned using the treatments described under Proposed Road Treatments above.

Specific Road and Trail Actions
A 1.1-mile section of FS Rd 9712113 would be converted from dual use to system jeep trail, to reduce road maintenance costs while still maintaining a popular 4X4 loop (the 4WD 339 connection to 4WD 332).

Two relocations on 4W 339 are proposed in this alternative. A section of system trail in the Hill-climb Restoration Area would be relocated to a more sustainable location, and unauthorized hill-climbs totaling more than 1 mile would be blocked and restored. These actions would take place during a required temporary closure of 4WD 339 for public safety during timber haul. The closure will exist on weekdays during active logging operations, the contractor will be required to clean and clear the trail for weekend use.

Activities would be sequenced, as follows for Relocation No. 1(Hill-Climb Restoration Area, Area 1 in Figure 7):
- Phase 1 - Restoration of existing system trail and hill climbs, including:
  - Soil scarification to restore soil/water infiltration and reduce runoff from trail tread;
  - Burying woody debris in the tread to enhance soil productivity for plant growth and moisture retention;

- Recontouring the abandoned tread, where feasible, to match native soil elevations;
- Constructing sediment traps on steeper portions of trail to slow and impound water, and trap sediment;
- Constructing effective barricades at junctions with system trail and roads. These may include rock, wood, and/or snow fencing;
- Installation of signing to inform the public of the nature of this work and to designate open routes.

- Phase 2 -Trail relocation:
  - Construct the new trail segment, approximately 2700 feet in length, originating at the end of FS Road 9712113, then following the approximate alignment shown on map below.
  - Final trail relocation to be staked in the field with the involvement of recreation/trails personnel and the district hydrologist. Drainage features (such as rolling grades) would be incorporated into the new trail tread.
  - Beginning of trail will require a new stream crossing approach and a stream crossing structure which meets all appropriate Best Management Practices (BMPs) for flood capacity (100-yr event) and water quality. Beyond the stream crossing, the trail would avoid alignment on an existing abandoned cut skidtrail and instead establish an elevation (following hillslope contours) and grade to provide for positive trail surface drainage.
  - Trail design will avoid concentrating and discharging surface storm runoff back into the stream crossing.
  - Where the new trail transitions from the hillslope contour onto the ridgeline, the trail grade will be flattened to provide for drainage relief. The intent is to avoid trail runoff from being concentrated off of the trail surface and over the hillslope onto highly erodible soils.

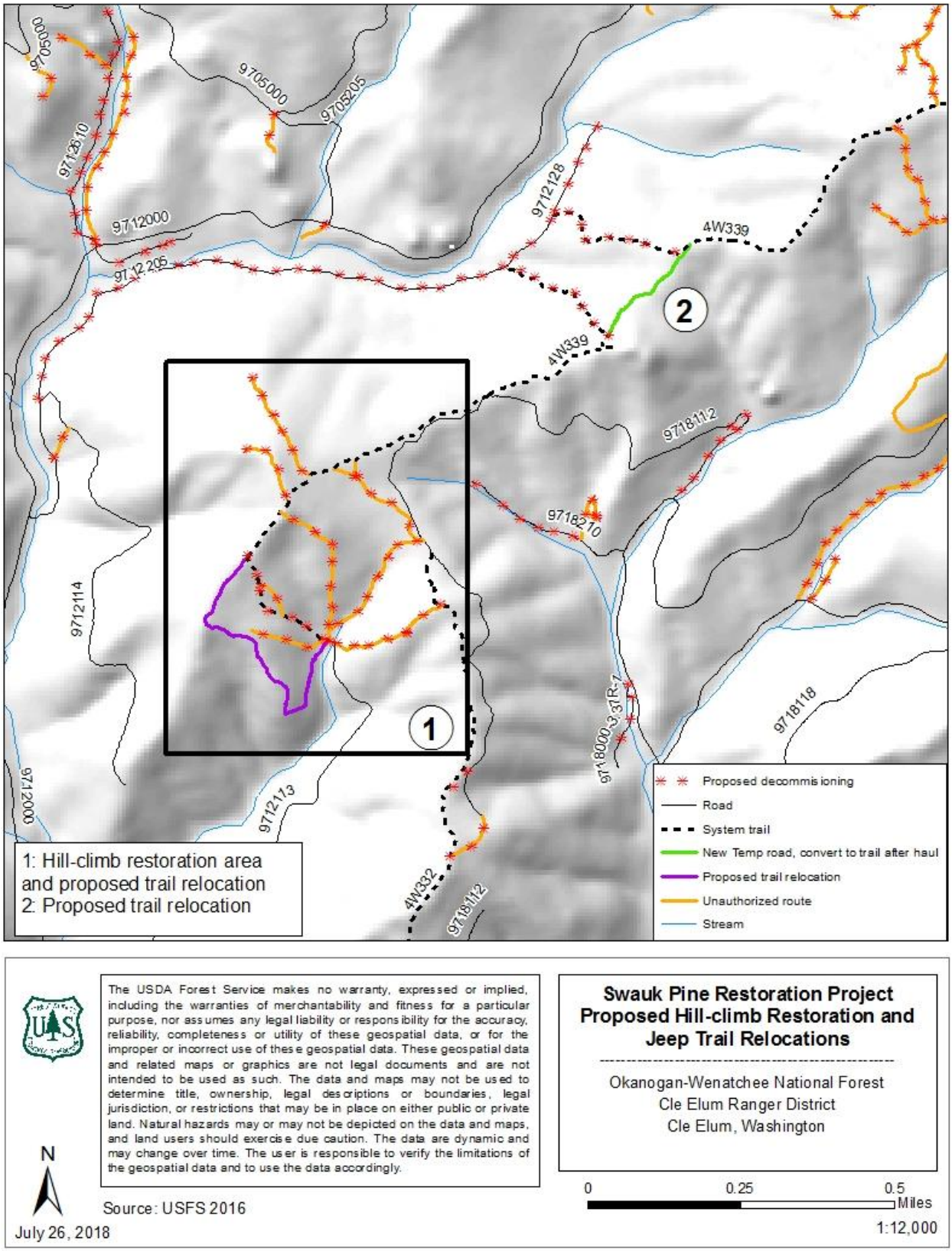
- Phase 3 – Monitoring (Education and Enforcement): The Forest Service would enlist the assistance of willing user groups to monitor the effectiveness of restoration efforts in the Hill Climb Area and Lion Gulch. If compliance problems continue to jeopardize restoration efforts, emergency closure may be required in the future.

2. Relocation No. 2 (Lion Gulch, Area 2 on map below)
   - Two steep and eroding segments of 4WD 339 between the ridge and Lion Gulch would be decommissioned, and replaced with a new trail segment (0.21 mi total) located on the ridge. The new trail segment would be constructed as a ridgeline haul route to support planned commercial thinning, and left as a closed road at the end of harvest. It would then be roughened and narrowed as part of a permanent road-to-trail conversion.

Road and Trail Improvements

Road and trail actions that provide for riparian and aquatic habitat restoration, including:

- installing effective road closures;
- redesigning road segments adjacent to or crossing streams, wetlands, and groundwater seepage areas to restore natural flowpaths and streambed elevations in wet meadows and flowpaths;
- decommissioning roads and trails in riparian areas to restore wetland, steam and floodplain functions;
- reconstructing, relocating, or improving roads and 4X4 trails to eliminate sediment and impacts to hydrology. Improvements would include adding ditch relief and road surface drainage features to disconnect road runoff (from surfaces and ditches) from stream crossing culverts.



Best Management Practices (BMPs), Standards, and Design Criteria

Best Management Practices (BMPs), Standards and Project Design Criteria are an integral part of the action alternative and serve to minimize the impacts of activities on natural resources. They are considered to be part of the proposed action. The content and effects analyses for each resource are dependent upon adherence to the BMPs, Standards, and design criteria during project implementation.

Forest Service Handbook 2509.25 Watershed Conservation Practices Handbook, and USDA National Best Management Practices for Water Quality Management on National Forest System lands (USDA 2012) provide guidance and BMPs concerning impacts to streams. Best Management Practices (BMPs) for water quality and timber sale contract provisions would be followed to prevent or reduce adverse impacts to water quality from forest activities and meet the requirements of the Clean Water Act (PL1.1972, Federal Water Pollution Control Act and later amendments).

Best Management Practices (BMPs) for water quality are methods, measures, or practices selected by an agency to meet its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters (36 CFR 219.19).
On the Wenatchee National Forest, use of BMPs is a Forest Plan standard for protection of water quality, as follows: Comply with state requirement for protection of waters through planning, application, and monitoring of BMPs in conformance with the Clean Water Act, regulations, and federal guidance issues thereto (Forest Plan pages IV 94-95).

BMPs Common to All Ground Disturbing Activities

- Forest workers would inspect, remove and properly dispose of weed seed and plant parts on their clothing, equipment including and vehicles. (BMP I-3.4).

- When operating outside the limits of the road prism, all heavy equipment (bulldozers, skidders, graders, backhoes, dump trucks, etc.) would be cleaned prior to entering National Forest System Lands. Cleaning of equipment would be required to occur off National Forest lands. (This does not apply to service vehicles that will stay on the roadway, traveling frequently in and out of the project area. (BMP I-5.1).

- Soil disturbance would be minimized to no more than needed to meet project objectives. (BMP III-23.1).

- All disturbed soil would be revegetated in a manner that optimizes plant establishment for that specific site. (BMP I-4.3).

- Only weed-free plant materials and mulch would be used for revegetation and site stabilization. (BMP I-4.5).

- Native plant materials would be the first choice for revegetation. When timely natural regeneration of the native plant community is not likely to occur; non-native, non-invasive plant species would be used as an interim, non-persistent measure designed to aid in the re-establishment of native communities would be utilized in revegetation projects. Seeding and or planting will occur at the appropriate times in spring and fall where needed to reduce erosion, prevent weeds from re-invading, or to hasten recovery of non-weed species. (BMP I-4.6).

- Revegetation efforts would be monitored and evaluated for effectiveness of revegetation efforts. (BMP I-4.9).

- All gravel, fill, sanding stockpiles, quarries and borrow sources would be inspected and approved prior to transport and use. The source will not be used if the weeds present at the pit are not found at the site of intended use. If weeds of concern are present, they must be treated before transport and use. (BMP I-5.3).

- Water for dust abatement and other uses would not be drafted from weed infested water sources. (BMP I-4.14).

- In addition to the above referenced BMPs, the following site-specific standards and PDFs would be adhered to.

- All proposed restoration activities would be designed and implemented to avoid all known Interagency Special Status Plant Species.

Design Criteria – By Resource Area

Design criteria would be implemented to avoid, minimize, reduce or eliminate impacts caused by implementation of either alternatives. This criteria is set in place to help design the project actions to mitigate impacts or avoid them all together, minimize the degree or magnitude of the impact, reduce the impact over time, rectify the impact, or compensate for the impact (40 CFR 1508.20). Some of these mitigations may be required for compliance with laws, regulations, and policies, or forest plans.

Soils

Summer Ground-Based Yarding

1. Summer ground-based yarding will occur when soils are dry (soil moisture is near or below the permanent wilting point); timber sale administrators will be on sight to ensure operating conditions are appropriately followed.

2. Existing skid trails will be used to the extent feasible in ground-based units.

3. De-compact, re-seed, and slash the entrance to skid trails (first 100 feet), and access to skid trails from landings, to limit illegal OHV access. Scarification or excavator de-compaction will be employed.

Skyline Systems

4. Corridors and landings will have erosion control treatments following logging and site prep activities. Treatments included in the timber sale contract would include construction of water bars and placing of slash on bare soils in the corridors and landings where deemed necessary by the timber sale administrator.

5. Groundcover recovery would be achieved with needle cast and vegetation re-growth.

Temporary Roads

6. Rehabilitation activities on new temporary road construction would include re-contouring, slashing, and seeding.

7. Unauthorized roads used for timber haul will be stabilized by removing drainage structures, ripping, seeding, and fertilizing the roadbed, and closing the entrance to these roads.

Hand-piling and Burning (Not Associated with Landings)

8. Pile sizes will average 6-8 feet in diameter so localized areas of soil disturbances will be less than about 50 square feet in size.

9. Pile burning should occur during moist conditions to minimize duff consumption and high severity burn impacts on soils.

10. Where feasible, pile and burn slash where detrimental soil disturbance already exists, such as on old log landings, skid trails, and roads associated with the past harvest units. By piling and burning thinning slash in areas where soil disturbance currently exists, no new areas of detrimental soil disturbance would result from proposed actions.

Prescribed Fire and Maintenance Burning

11. Upon completion of prescribed fire or maintenance burning, at least 70 percent ground cover is necessary to prevent detrimental accelerated erosion and loss of soil productivity. In those cases where ground cover is less than 70 percent prior to burning, consumption and loss of ground cover should not exceed 15 percent. Ground cover includes duff, organic soil horizons, vegetation, fine woody debris, coarse woody material (CWM), and surface coarse fragments. Fire prescriptions will be designed to meet these soil protection requirements.

12. Course woody material (CWM) larger than 15 inches in diameter will not be intentionally ignited during hand lighting operations. However, once hand crews light the fire, the fire may burn into large CWM and combust various pieces.

13. Allow time for nutrients to leach from slash prior to burning. The slash will be left through one winter after cutting to allow for initial decomposition and nutrient leaching.

Botanical Resources

Invasive Species

14. All standard timber sale contract provisions for erosion control and revegetation would apply. Timing and inspection would be administered by timber sale administrator.

15. Locally adapted native plant material or seeds are the first choice in revegetation or restoration where timely regeneration is not likely to occur. Under no circumstances will non-native invasive plant species be used for revegetation purposes (FSM 2070, 2008, USDA Forest Service 2005, and ROD Standard 13).

16. Certified Weed-free plant materials and mulch would be used for revegetation and site stabilization when needed (USDA Forest Service 2005, ROD Standard 3).

17. Seeding and/or planting would occur at the appropriate times in the spring or fall where needed to reduce erosion, prevent weeds from re-invading, or to hasten recovery of native plant species (USDA Forest Service, 2002, BMP I-4.6, III-10.2).

18. All gravel, fill, sand, quarry and borrow material must be inspected by the county weed board or a district weed specialist before transport or used in the project area. Infested sources are required to be treated before any use of pit material is used (USDA Forest Service 2005, ROD Standard 7).

19. The time between completion of an activity and rehabilitation of a site would be minimized by: (1) open and timely communication between all departments involved in creating and restoring disturbed areas, (2) requiring seeding to be completed within a reasonable amount of time prior to the activity completion and within the correct seeding time frame (3) monitoring disturbed areas for compliance (USDA Forest Service, 2002, BMP I-4.7, III-10.2).

20. Revegetation efforts would be monitored and evaluated by district botanist (USDA Forest Service, 2002, BMP I-4.9, III-10.2; Standard 12).

21. Road brushing would be avoided on heavily weeded roads once seed has set (USDA Forest Service 2005, ROD Standard 8).

22. Road maintenance activities would be coordinated with invasive plant treatment (hand pulling, mowing, herbicide application, planting) to maximize efficacy (USDA Forest Service, 2002, BMP III-9.1; Standard 8).

23. Application of herbicides to treat invasive plants will be performed or directly supervised by a State or Federally licensed applicator. An herbicide transportation and handling safety plan will be developed prior to application of herbicides (USDA Forest Service 2005, ROD Standard 15).

24. Prior to implementation of herbicide treatment the Forest Service system staff will ensure timely public notification. Signs will be posted in treatment areas to inform the public and forest workers of herbicide application dates and herbicides used. If requested, individuals will be notified in advance of spray dates (USDA Forest Service 2005, ROD Standard 23).

25. Use only adjuvants (e.g. surfactants, dyes) and inert ingredients reviewed in Forest Service hazard and risk assessment documents such as SERA, 1997a, 1997b; Bakke 2002 (USDA Forest Service 2005, ROD, Standard 18).

26. To reduce or eliminate direct or indirect negative effects to non-target plants, terrestrial animals, water quality and aquatic biota (including amphibians) from the application of herbicide, use site-specific soil characteristics, proximity to surface water and local water table depth to determine herbicide formulation, size of buffers needed, if any, and application method and timing. Only consider those herbicides and herbicide mixtures registered for aquatic use when evaluating herbicide use near streams or surface water (USDA Forest Service 2005, ROD Standard 19).

27. Only Animal and Plant Health Inspection Service (APHIS) and State approved biological agents will be used for biological control. Agents that have a direct negative impact on non-target organisms will not be released (Standard 14).

28. Skidtrails, temp roads and landings will be revegetated with locally adapted native vegetation or covered in weed free woody mulch material if vegetation loss has occurred and bare soil is present (USDA Forest Service 2005, ROD Standard 13 and Standard 3).

Rare Plant Protection

29. A one tree length equipment exclusion buffer will be provided around all known rare plant sites.

30. At least 60% canopy closure will be retained around known Cypripedium sites (a species of concern).

Wildlife

31. Operation of tracked machinery, heavy equipment, and chainsaws within ¼ mile of active raptor or spotted owl nests will be seasonally restricted, unless field surveys indicate that birds are not nesting. In the absence of surveys, or if birds are nesting, there will be no operation of equipment between March 1 and August 31.

32. Operation of helicopters within 0.6 mile of known raptor or spotted owl nests will be seasonally restricted, unless field surveys indicate that birds are not nesting. In the absence of surveys, or if birds are nesting, there will be no operation of equipment between March 1 and August 31.

33. Spring burning operations within 0.6 mile of active spotted owl nests will not result in smoke accumulation in core nesting areas. Burning conditions must be such that smoke trajectories will not fall within 45 degrees of active nests. A test fire will be lit to verify smoke trajectory.

34. No more than 25% of any sixth field watershed will be treated with prescribed fire in a single year.

35. Operations shall be limited to either Lion Gulch or Cougar Gulch between May 15 and July 15 for the mule deer and elk fawning/calving period.

36. Currently there are no known wolf den or rendezvous sites in the Project Area. If either is located, reinitiate consultation with the U.S. Fish and Wildlife Service to determine appropriate response.

Aquatic Resources (Fish)

Road Construction and Reconstruction

37. Road alignments should be located to minimize disturbance to wetlands, disruption of unconfined streamflow and groundwater emergence and recharge.

38. New or reconstructed road segments originating from existing roads within Riparian Reserves should not exceed a 10% slope gradient within the first 200 ft. of the road segment in order to avoid or minimize the risk of concentrating and channeling runoff and sediment down road surfaces and into streams.

39. Cross-drain road surfaces through a vegetative filter strip prior to road approach reaching stream crossing structure.

40. All temporary roads would be decommissioned under the timber sale contract by the purchaser, to a standard which prevents use by all motorized vehicles including OHVs and effectively returns the road to a stable hydrologic state.

Road Management

41. Appropriate erosion control measures such as: seasonal closures, gravelling, maintenance, ditching water routing structures, sediment traps, water bars, and drivable dips would be employed to minimize erosion. Route water off road prisms and fills, and disperse across a vegetated slope.

42. Cross drain and dich cleanout would be used to remove sediment, debris, and other blockages which impede surface water routing.

43. Road edge berms would not be left after cleanout. Mechanized cross drain and ditch cleanout would not occur within 25 feet of stream channels or crossings.

44. Avoid cutting the toe of cut slopes when grading roads or pulling ditches.

45. Water drafting sites for dust abatement and road compacting would be identified by a fish biologist and/or hydrologist to avoid adverse dewatering effects to fish. Water drafting/pumping would maintain a continuous surface flow of the stream without altering the original wetted width. Any draft suction hose used in fish-bearing waters would be equipped with a screen of 3/32 inch mesh or less and would have an intake flow of less than 1 cubic foot/second to prevent entraining juvenile fish.

Landing construction and Rehabilitation

46. Landing locations on roads within Riparian Reserves would not encroach into the Riparian Reserve and would be constructed into the treatment unit. A native vegetation filter strip or concentrations of logging slash would surround the perimeter of all landings located within Riparian Reserves to serve as a sediment trap. Objectives for landing construction include maintaining the existing mature conifer and hardwood overstory to maintain riparian shade within the reserve (also consider location of slash piles for retention of overstory canopy).

47. Landings would be located in upland portions of the reserves, on flat terrain when possible, and disconnected from surface or groundwater flow paths. Landing construction locations would avoid seeps, springs and wetlands, as well as draws and ephemeral channels.

48. The size of new landings in the riparian zone would be what is the minimal needed to log while best protecting riparian soils and tree retention.

49. Post-logging soil scarification and reseeding would be done on landings to restore infiltration and ground cover on all compacted soils.

Felling and Yarding

50. Avoid downhill yarding and skidtrail layout converging into Riparian Reserves, particularly where skidtrails converge onto a road surface within the reserve. This action increases the risk of capturing and concentrating overland flow and storm runoff and delivering it to streams, which affect peak flows downstream.

51. Designate skidtrails at a minimum of 100 foot spacing to minimize risk of overland flow.

52. Directional felling and designated skidtrails and skyline yarding corridors would be established within the treatment portions of Riparian Reserves.

53. Skidding and yarding would not occur across the no treatment areas of Riparian Reserves.

54. Avoid downhill yarding onto roads located in Riparian Reserves using either ground or skyline yarding systems in order to prevent soil movement into Riparian Reserves.

55. Install waterbars on corridors when necessary, upon completion of yarding operations.

Fuels Management/Slash Disposal

56. Test fire will be conducted in the treatment portion of Riparian Reserves to confirm appropriate low intensity burning conditions prior to stand ignition.

57. Burning of landing slash piles located in Riparian Reserves would not occur until the soil decompaction work is completed at the landing and on temporary roads to protect the intended function of the piles as sediment traps for runoff from landings.

58. Slash would not be piled, concentrated, or burned within the no treatment portions of the Riparian Reserves.

59. Firelines would have waterbars (ditches or dips built into the fireline, not berms) constructed to divert surface water off of the line and onto vegetative surfaces. Waterbars would be constructed at the time of fireline construction.

60. Hand firelines may need to be constructed within 100 feet or one site potential tree length from streams to tie in suppression needs with anchor points; wherever possible fireline within 100 feet or one site potential tree from streams will be avoided. No handline would be constructed within inner gorges of stream channels.

61. Fireline would be rehabilitated using methods that prevent public use as hiking trails, bike routes, motorcycle routes, etc.

62. Design fire prescriptions to not exceed a severity rating of low for 90% of the no treatment area of Riparian Reserves, with no more than 10% of the no treatment area in a moderate severity rating. Fire severity ratings are as follows:
    a. Low Fire Severity: Low soil heating, or light ground char, occurs where litter is scorched, charred, or consumed, but the duff is left largely intact, although it can be charred on the surface. Woody debris accumulation is partially consumed or charred. Mineral soil is not changed. Fire severity in forest ecosystems is low if the litter and duff layers are scorched but not altered over the entire depth.

    b. Moderate Fire Severity: Moderate soil heating, or moderate ground char, occurs where the litter on forest sites is consumed and the duff is deeply charred or consumed, but the underlying mineral soil surface is not visibly altered. Light colored ash is present. Woody debris is mostly consumed, except for logs, which are deeply charred.

    c. High Fire Severity: High soil heating, or deep ground char, occurs where the duff is completely consumed and the top of the mineral soil is visibly reddish or orange on severely burned sites. Color of soil below one cm is darker or charred from organic material. The char layer can extend to a depth of 10cm or more. Logs can be consumed or deeply charred, and deep ground char can occur under slash concentrations or burned-out logs. Soil textures in the surface layers is changed and fusion evidenced by clinkers can be observed locally.

63. Locate re-fueling and fuel storage areas outside of Riparian Reserves or on a road, away from water and drainage areas, in locations where the largest possible spill can be contained before entering water. In the event of a fuel spill during a burn project the Forest Hazardous Materials Coordinator would be contacted to coordinate clean up.

64. The use of pumps would not involve any streambed alteration, and pump chances would not pose any barrier to fish movement. Intake screens would be used on all pumps. Fuel would be located in containment basins and hazard materials spill kits would be available for spill containment.

65. No surfactants or foams would be used within 100 feet of the edge of wetted channels or wetlands. Engines which have had surfactant would not draft from fish-bearing waters. The deployment of hose will not require any ground disturbance, and in many cases the use of hose for wetline could reduce the need for hand fireline construction.

66. Pump locations would be identified by a fish biologist and/or hydrologist to avoid adverse dewatering effects to fish. Coordination of pump locations will occur with resource specialists. Water drafting/pumping would maintain a continuous surface flow of the stream without altering the original wetted width. Any draft suction hose used in fish-bearing waters would be equipped with a screen of 3/32 inch mesh or less and would have an intake flow of less than 1 cubic foot/second to prevent entraining juvenile fish.

Aquatic Restoration Projects

67. Project design criteria for road decommissioning, culvert removal/replacements, in-stream channel work, large wood placement, and dispersed campsite modifications are from the Programmatic Biological Assessment for Fish Habitat Restoration Activities Affecting ESA-Listed Animal and Plant Species and their designated or proposed Critical Habitat and Designated Essential Fish Habitat under MSA found in Oregon, Washington and portions of California, Idaho and Nevada (USFS/USDI/BIA 2013).

68. All provisions and standards in the Memorandum of Understanding between Washington State Dept. of Fish and Wildlife and USDA Forest Service, Pacific Northwest Region (USFS and WDFW 2012) will be followed.

69. All conditions and requirements within the U.S. Forest Service Aquatic Restoration Program regional general permit (RGP-8) (USACE 2011) will be met.

70. All design criteria and conservation measures in the 2013-2017 Programmatic Biological and Conference Opinions (BiOps) for Aquatic Restoration Activities in Oregon, Washington and portions of California, Idaho and Nevada will be met (NMFS 2013 and USFWS 2013).

LWD Placement

71. All work that would be conducted within the wetted channel would occur during established in-water work windows. Flood plain work or work outside of the channel may occur at any time of the year; however, seasonal operating restrictions would apply to operation of chainsaws and heavy equipment.

72. Tree removal within the Reserve would be done in a manner which protects existing shade over water and prevents any increase in maximum water temperatures due to canopy removal. Additionally, no tree removal would be done in a manner which would reduce stream bank stability.

73. For tree removal in upland areas: when safety allows, retain-all standing trees and snags exhibiting cavities, hollow structure or dwarf mistletoe brooms. Retain all hardwood trees. Retain the largest available trees for large tree retention, and do not remove trees >25" DBH, unless they are surplus to the large tree retention need. Remove trees 20" DBH to 24" DBH only if they are not needed to meet large tree retention objectives.

74. Do not remove trees or operate equipment within falling radius of standing snags.

Herbicide use

75. To avoid adverse effects to MCR steelhead, application of herbicides would not occur within 50 feet of Williams Creek between late June and early August when there is a high probability of juveniles occupying stream margin habitat where potential drift from herbicide application would not dissipate from the low flow and low stream mixing stream margin habitat.

Range

76. Annual operating and implementation plans for range use, invasive plant management, non-commercial thinning, prescribed burning, and riparian treatments would be coordinated annually, to reduce or avoid potential conflicts.

77. Range permittees would be notified prior to herbicide application and applicable management practices would be followed.

78. Ensure adequate access to grazing areas (using roads) in order to utilize as much of the allotment as possible and to minimize impacts to major road corridors.
    - ✓ When a road is closed or decommissioned, either maintain 300 feet of space at the road beginning or provide alternative parking area for the permittee.
    - ✓ When restoration work is performed (and avoidance is requested) in close proximity to authorized Key Route, an alternative route, and/or bed grounds, adequate access must be identified and provided in order to honor the ten (10) year Term grazing permit.

79. Deferment of grazing for up to two seasons would be implemented prior to and following prescribed fire and thinning treatments to encourage vigorous seedling establishment.

Recreation

80. Winter logging may require plowing of roads used as groomed snowmobile routes. If that occurs, these roads would be closed to public use from Monday through Friday, due to safety concerns. The contractor would retain at least 2 inches of snow on plowed routes. Plowed roads would be open to public use (snowmobiling) on Saturday and Sundays.

Cultural Resources

81. All sites found (through consultation with the State Historic Preservation Office) to be eligible for protection under the National Historic Protection Act will be protected through avoidance.

Scenic Resources

82. Changes in form, line, color and texture resulting from management activity should not be evident for more than one season in ST-1 areas and two seasons in ST-2 prescriptions areas (WNFP, page IV 205-215). Rehabilitate area to be natural appearing by earth re-contouring, removal of woody materials from site, area smoothed out and grass seeded with appropriate grass mix.

83. Mechanical evidence created along the immediate roadside of Liberty, other private property located in the rural interface and along the Lion Gulch FR 9712 loop to Cougar Gulch FR 9718 & Durst Creek FR 9705 will be rehabilitated.

84. Enhancement of large tree viewing opportunities from travel routes, Liberty and rural interface homes, by thinning and removing smaller trees around large trees.

85. Blend earth mounds and large boulders adjacent to the existing landscape for road closures, rehabilitate landings along all main roadsides.

86. Locate landings outside of seen areas or leave vegetation screening where possible. When landings are located on Forest Roads, keep them within the existing road prism and do complete cleanup of roadside when done.

Silviculture

87. Conserve legacy trees during yarding and underburning. Locate yarding corridors around legacy trees where possible. Avoid stacking landing piles next to or on legacy trees. In stands with many legacy trees, pull back surface fuels and rake bark slough from tree bases. Use ignition patterns that pull heat away from large trees. Use summer or fall burning windows if possible in legacy tree stands, to avoid killing fine surface roots in the spring.

88. Prune out lower mistletoe in leave trees before burning to avoid individual tree torching during prescribed burning.

89. Conserve small leave tree clumps and complex patches in the ICO prescription with directional tree felling and yarding away from these areas. When lighting prescribed fire do not light under leave clumps and complex patches. If possible approve landings and skyline corridors that have the least impact on the ICO leave tree patterns.

TIMELINES:

The following pages outline which activities are to take place in the four (4) different drainages. **Activities can only occur in one drainage at a time to minimize affects on resources, so coordination between resources is vital to success.**

As of Oct 2018, Level 1 consultation is scheduled for Nov. 2018. The EA is scheduled to be signed late winter/early spring of 2019. Shortly after that, the Swauk Pine Timber Sale will be put up for bids. Implementation of the timber sale could occur immediately, but that is up to the purchaser.

Any of the projects listed in the table before the left hand heading of "Timber Sale Contract Awarded" in each of the subdrainages, can be designed and implemented anytime after NEPA is signed. This work can start being designed or laid out field season of 2019 with implementation in 2020. This would also include securing the funding.

TIMELINE - for Lion Gulch Activities

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	**Lion Gulch Activities**	**Site Id**	**Comments**	**Wildlife Restrictions**	**Fish Restrictions**	**Funding Source**	**Date Work Accomplished**
		Aspen Regeneration					Force Account	
		Fencing of Aspen Stand Post-Regen Project						
		Mastication			Can only operate in 1 gulch at a time between May 15-July 15			
		Pre-Commercial thinning and pile burning						
		Legacy Tree Protection					Force Account	
		Natural Fuels Underburn					WFHF	
		AOP: 9712-209 decommission	22	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15			
may be done with road pckge		9712-000 groundwater road redesign	26	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15			
		Tributary LWD replenishment	28	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16	KCT	
		Decommission illegal OHV trail	32	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15			
		9712 road slump redesign	33	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15			Accomplished in 2017 with ERFO
		9712 ditch relief	35	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15			
		AOP: 9712-116	36	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15			
		LWD replenish tributary	37	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		LWD replenishment	38	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	Lion Gulch Activities	Site Id	Comments	Wildlife Restrictions	Fish Restrictions	Funding Source	Date Work Accomplished
		Road bed/ rail grade removal	39	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Road bed/ rail grade removal	40	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Road bed/ rail grade removal	41	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Road bed/ rail grade removal	42	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		LWD replenishment	43	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16	KCT	
		Dispersed Campsite Rehab (Site 46)	46	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15			
		Ditch Relief culverts	56	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15			
		Restore Log Skidding Damage	69	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Restore Log Skidding Damage	70	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Restore Log Skidding Damage	71	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Skid Trail Restoration and unauth Road Decom.	72	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Landing Restoration	73	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		9712 AOP restoration	76	* If action occurs after Timber Sale Contract Signed, must coordinate with	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	Lion Gulch Activities	Site Id	Comments	Wildlife Restrictions	Fish Restrictions	Funding Source	Date Work Accomplished
				Sale Admin				
		abandon road restoration	77	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15			
		Puncheon 4WD trail crossing, replace ford	79	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		9712-115 road redesign groundwater seep	90	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15			
		9712 road culvert trib channel scour	92	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Dispersed Campsite Walk-in Access	94	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Weed Spraying					CFVW08 /KV??	
		9712-204 Decommission		Provides Mine Access- No POO				
		9712-614 Decommission						
		9712-205 Decommission						
		9712-215 Decommission		Provides Mine Access- No POO				
		9712-000-6.50L-1 Decommission						
		9705-000-4.77L-1 (UA48) Decommission						
		9705-000-3.78R-1 Decommission						
		9705-000-4.53L-1 Decommission						
		9712-000-5.59L-1 Decommission						
		9712-000-8.03R-3 (9712-621) Decommission						
		9705-000-4.62L-1 Decommission						
		9712-128 Decommission						
		9712-115-0.60L-1 Decommission		Provides Mine Access- No POO				
		9712-610 Decommission						
		9712-624 Decommission						
		9712-000-1.05R-1 (UA19)Decommission		Provides Mine Access- No POO				
		9712-622 Decommission						
		9712-621 Decommission						
		9712-000-1.29R-1 (UA20) Decommission		Provides Mine Access- No POO				

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	Lion Gulch Activities	Site Id	Comments	Wildlife Restrictions	Fish Restrictions	Funding Source	Date Work Accomplished
		9712-113 Decommission		Provides Mine Access- No POO				
		9712-207 Decommission						
		9705-000-4.53L-1 Decommission						
		9712-000-6.50L-2 Decommission						
		9712-209 Decommission		Provides Mine Access- No POO				
		9712-000-0.70R-1 (UA21) Decommission (Campsite 26)		Provides Mine Access- No POO				
		9712-113-2.24L-1 (UA23) Decommission		Provides Mine Access- No POO				
		9712-113-2.65R-1 (UA25) Decommission		Possibly Provides Mine Access- No POO				
		9712-113-2.69R-1 (UA26) Decommission		Possibly Provides Mine Access- No POO				
		9712-000-3.46R-1 (UA37) Decommission		Provides Mine Access- HAS POO PENDING				
		9712-000-6.75L-1 (UA41) Decommission						
		9705-000-3.25L-2 (UA49) Decommission						
		9705-000-4.43L-1 (UA51) Decommission						
		9705-000-4.64R-1 (UA53) Decommission						
		9712-000-4.65R-1 (UA56) Decommission						
		9712-000-8.22R-1 (UA59) Decommission						
		9712-209-0.57R-1 (UA71) Decommission		Provides Mine Acces- NO POO				
		9712-000-5.76L-1 (T49) Decommission						
		9712-000-3.02L-1 (UA138) Decommission		Provides Mine Acces- NO POO				
		9712-610 (UA140) Decommission						
		9712-000-4.21R-2 (UA151) Decommission						
		UA338 Decommission						
		9712-000-5.99R-1 (UA371) Decommission						
		UA24 Decommission		Provides Mine Access- NO POO				
		UA27 Decommission						
		UA29 Decommission		Provides Mine Access- NO POO				
		UA35 Decommission		Possibly Provides Mine Access- NO POO				
		UA72 Decommission		Possibly Provides Mine Access- NO POO				

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	Lion Gulch Activities	Site Id	Comments	Wildlife Restrictions	Fish Restrictions	Funding Source	Date Work Accomplished
		UA158 Decommission						
		9712-124-0.46L-1 (UA132.2) Decommission						
Timber Sale Contract AWARDED								
		Log Units: 27,28,29,30,31,32,34,35,36,37,38,39,40,41,			Can only operate in 1 gulch at a time between May 15-July 15			
		43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,			Can only operate in 1 gulch at a time between May 15-July 15			
		60,61,62,63,64,65,66,67,70,77,78			Can only operate in 1 gulch at a time between May 15-July 15			
		Upon Completion of Unit 36&37: Jeep Trail Relocation Can Occur						
		Landing Pile and Underburning after unit acceptance		Grazing Restrictions Apply				
		Weed Spraying						
		Improve stream crossing w/timber sale road work	78					
Timber Sale Contract COMPLETED								
		Remaining Prescribed Underburn		Grazing Restrictions Apply				
		Tree Planting						
Burning Completed								
		Unauthorized Roads Durst/Lion Divide Campsite Rehab (Site 91)	91		Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		AOP 9712-114	47		Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		9712-207 Decommission						
		9712-210 Decommission and Stabilization	20					
		End of 9712-115 Decommission						
		9712-214 Decommission						
		9712-000-6.99R-1 (UA58) Decommission		Provides Mine Access- NO POO				
		9712-000-1.28R-1 (UA133) Decommission		Provides Mine Access- NO POO				
		9712-113-2.69R-1 (T76) Decommission						
		UA43 Decommission						
		UA44 Decommission						
		UA321 Decommission		Provides Mine Access- NO POO				

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	**Lion Gulch Activities**	**Site Id**	**Comments**	**Wildlife Restrictions**	**Fish Restrictions**	**Funding Source**	**Date Work Accomplished**
		UA324 Decommission		Provides Mine Access- NO POO				
		UA325 Decommission		Provides Mine Access- NO POO				
		UA326 Decommission		Possibly Provides Mine Access- NO POO				
		UA327 Decommission		Possibly Provides Mine Access- NO POO				
HARVEST AND BURNING								
NEEDS FOR WILD BLEW								
EVALUATED								
		9712-126 Decommission if NOT needed						
		9705-205 Decommission if NOT needed						
		UA150 Decommission if NOT needed						
			0					

TIMELINE - for Cougar Gulch Activities

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	Cougar Gulch Activities	Site ID	Comments	Wildlife Restrictions	Fish Restrictions	Funding Source	Date Work Accomplished
		Natural Fuels Underburning					WFHF	
		9718-112 Stream crossing restoration	1	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16	KCT	September 2018 - was broke out into separate CE
		9712 Stream crossing restoration	2	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Wet meadow restoration	4	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Illegal 4x4 trail restoration	5	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		LWD channel/floodplain connect restore	6	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		LWD Replenishment	30	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		LWD Replenishment	31	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Dispersed Rec site restored(Site 1)	50	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Dispersed Rec site restored/decom road	52	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		LWD replenishment	54	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		AOP	55	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16	KCT	September 2018 - was broke out into separate CE
		Add ditch relief pipe on all tributary crossings	56	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	Cougar Gulch Activities	Site ID	Comments	Wildlife Restrictions	Fish Restrictions	Funding Source	Date Work Accomplished
		Cougar Gulch AOP	57	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		9718-118 AOP restoration	59	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Billy Goat Small Dam Removal; AOP restore	60	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Channel Flood Plain Restoration	62	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Trib/Wetland road crossing removal	63	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Tib 1/ Stream Channel Restoration	64	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Trib Diverstion/sistern/dewatering	65	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Removal of abandoned mining equipment	67	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Billy Goat 9718 AOP	81	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		9712 road culvert trib channel scour	92	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Weed Spraying					CFVW08 /KV??	
		9718-000-1.87R-2 (UA67) Decommission		Provides Mine Access - No POO				
		9718-801-0.27R-1 (UA93) Decommission		Provides Mine Access - No POO				
		9718-000-4.13R-2 (UA113) Decommission						
		9718-000-3.37R-1 (9718-615) Decommission						
		Unnamed Road By Liberty burn decommission						
		9718-118-0.53L-1 (UA62) Decommission		Provides Mine Access- NO POO				

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	Cougar Gulch Activities	Site ID	Comments	Wildlife Restrictions	Fish Restrictions	Funding Source	Date Work Accomplished
		9718-118-0.50L-1 (UA63) Decommission		Possibly Provides Mine Access- NO POO				
		9718-118-1.00L-2 (UA64) Decommission		Provides Mine Access- HAS A PENDING POO				
		9718-118-1.00L-2 (UA65) Decommission		Provides Mine Access- HAS A PENDING POO				
		9718-1.87R-1 (UA66) Decommission		Provides Mine Access- NO POO				
		9718-000-1.38L-13 (UA83) Decommission		Provides Mine Access- NO POO				
		9718-000-1.38L-16 (UA84) Decommission		Provides Mine Access- NO POO				
		9718-000-1.39L-1 (UA85) Decommission						
		9718-000-1.38L-11 (UA108) Decommission		Provides Mine Access- NO POO				
		9718-000-1.38L-10 (UA109) Decommission		Provides Mine Access- NO POO				
		9718-000-1.38L-9 (UA110) Decommission		Provides Mine Access- NO POO				
		9718-000-1.38L-2 (UA111) Decommission		Provides Mine Access- NO POO				
		9718-000-4.13R-1 (UA112) Decommission		Provides Mine Access- NO POO				
		9718-000-1.38L-3 (UA114) Decommission		Provides Mine Access- NO POO				
		9718-000-1.38L-12 (UA115) Decommission		Provides Mine Access- NO POO				
		9718-000-1.38L-15 (UA116) Decommission		Provides Mine Access- NO POO				
		9718-112-0.03L-1 (UA 136.1) Decommission		Provides Mine Access- NO POO				
		9718-000-3.73R-1 (UA137) Decommission		Provides Mine Access- NO POO				
		9718-112-0.88L-2 (UA318) Decommission						
		9718-000-1.38L-5 (UA206) Decommission		Provides Mine Access- NO POO				
		9718-000-1.38L-5 (UA224) Decommission		Provides Mine Access- NO POO				
		9718-000-2.06R-1 (UA332) Decommission						
		UA339 Decommission		Provides Mine Access- NO POO				
		UA82 Decommission						
		UA92 Decommission		Provides Mine Access- NO POO				
		UA97 Decommission						
		UA98 Decommission		Provides Mine Access- NO POO				
		UA99 Decommission		Provides Mine Access- NO POO				
		9718-112 (tail end) Decommission						
Timber Sale Contract AWARDED								

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	Cougar Gulch Activities	Site ID	Comments	Wildlife Restrictions	Fish Restrictions	Funding Source	Date Work Accomplished
					Can only operate in 1 gulch at a time between May 15-July 15			
					Can only operate in 1 gulch at a time between May 15-July 15			
					Can only operate in 1 gulch at a time between May 15-July 15			
		Log Units:1,4,5,6,7,8,9,10,11,12,13,14,15,16,17,			Can only operate in 1 gulch at a time between May 15-July 15			
		18,19,20,21,22,23,24,25,26,			Can only operate in 1 gulch at a time between May 15-July 15			
					Can only operate in 1 gulch at a time between May 15-July 15			
					Can only operate in 1 gulch at a time between May 15-July 15			
		Landing Pile and Underburning		Grazing Restrictions Apply				
		Weed Spraying						
Timber Sale Contract								
COMPLETED								
		Remaining Prescribed Underbun		Grazing Restrictions Apply				
Burning Completed								
		Trib2 Stream Restore, pond decommission	66		Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		9718-210 decommission						
		9718-210 riparian restoration	8					
		9718-210-0.07R-1 (UA31) Decommission		Provides Mine Access- NO POO				
		9718-210-0.07R-1 (UA199) Decommission		Provides Mine Access- NO POO				
		9718-210-0.07R-1 (UA200) Decommission		Provides Mine Access- NO POO				
		9718-605 Decommission		Provides Mine Access- NO POO				
		9712-123 Decommission		Provides Mine Access- NO POO				
		9712-123-0.08R-1 (UA336) Decommission						
		9712-123-0.61R-1 (UA333) Decommission						
		9718-112 Decommission		Provides Mine Access- NO POO				

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	Cougar Gulch Activities	Site ID	Comments	Wildlife Restrictions	Fish Restrictions	Funding Source	Date Work Accomplished
				Provides Mine Access- NO POO				
		9718-000-2.06R-1 (T66) Decommission						
		9718-000-0.95L-2 (UA76) Decommission		Provides Mine Access- NO POO				
		9718-0.95L-1 (UA78) Decommission		Provides Mine Access- NO POO				
		9718-1.01L-1 (UA77) Decommission		Provides Mine Access- NO POO				
				Provides Mine Access- NO POO				
		9718-000-0.95L-1 (UA78) Decommission		Possibly Provides Mine Access- NO POO				
		UA150 Decommission						
		UA160 Decommission		Provides Mine Access-HAS A POO PENDING				
		UA161 Decommission		Provides Mine Access-HAS A POO PENDING				
		UA162 Decommission		Provides Mine Access-HAS A POO PENDING				
		UA163 Decommission		Provides Mine Access-HAS A POO PENDING				
HARVEST AND BURNING								
NEEDS FOR WILD BLEW								
EVALUATED								

TIMELINE - for Williams Creek Activities

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	William's Creek Activities	Site ID	Comments	Wildlife Restrictions	Fish Restrictions	Funding Source	Date work Accomplished
		Natural Fuels Underburning					WFHF	
		9718-801 Redsign Road grade PVT???	9	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		9718-115; 801 Ripar/Water Quality Improv PVT??	10	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Fork LWD replenishment	53	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a timebBetween May 15- July 15	No instream work between Feb 16-July 16		
		Add ditch relief pipes on all rd trib xing	56	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		9718 -116 AOP Restoration	83	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		Unauthorized floodplain road decommission	93	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin	Can only operate in 1 gulch at a time between May 15-July 15	No instream work between Feb 16-July 16		
		New Jeep Trail Loop Construction 9712-124 to 125						
		Weed Spraying				Not allowed within 50' of Williams creek during June-August	CFVW08 /KV??	
		9712-127-0.07R-1 (UA9) Decommission		Provides Mine Access- HAS A POO- but not mentioned in Authorization				
		9718-115-0.66L-1 (UA229) Decommission		Provides Mine Access- NO POO				
		9718-602 Decommission		Provides Mine Access- HAS A POO PENDING- closed by Miners Gate				
		9718-602-0.50R-1 (UA46) Decommission						
		9718-602-0.50L-1 (UA247) Decommission		Provides Mine Access- HAS A POO PENDING- closed by Miners Gate				
		UA366 Decommission		Provides Mine Access- HAS A POO PENDING				
		UA367 Decommission		Provides Mine Access- HAS A POO PENDING				

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	**William's Creek Activities**	**Site ID**	**Comments**	**Wildlife Restrictions**	**Fish Restrictions**	**Funding Source**	**Date work Accomplished**
Timber Sale Contract								
AWARDED								
		Log Units: 2,3			Can only operate in 1 gulch at a time between May 15-July 15			
		Landing Pile and Underburning		Grazing Restrictions Apply				
		Weed Spraying				Not allowed within 50' of Williams creek during June-August		
Timber Sale Contract								
COMPLETED								
		Remaining Prescribed Underburn		Grazing Restrictions Apply				
Burning Completed								
		9718-115-0.90L-1 (UA33) Decommission						
		9718-115-0.66L-2 (UA228) Decommission						
HARVEST AND BURNING								
NEEDS FOR WILD BLEW								
EVALUATED								

TIMELINE - for Highway 97 Activities

KEY DATES								
Signed Decision Notice						*Suspended Work Oct 3*???		
	Priority	**Highway 97**	**Site ID**	**Comments**	**Wildlife Restrictions**	**Fish Restrictions**	**Funding Source**	**Date Work Accomplished**
		Mining Reclamation (outside of planning area)	85	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin		No instream work between Feb 16-July 16		
		9700-161 erosion/seep/wetland restoration	86	* If action occurs after Timber Sale Contract Signed, must coordinate with Sale Admin		No instream work between Feb 16-July 16		
Timber Sale Contract								
AWARDED								
		Log Units:74,75,76			Can only operate in 1 gulch at a time Between May 15-July 15			
		Landing Pile and Underburning		Grazing Restrictions Apply				
Timber Sale Contract								
COMPLETED								
		Remaining Prescribed Underbun		Grazing Restrictions Apply				
Burning Completed								
HARVEST AND BURNING								
NEEDS FOR WILD BLEW								
EVALUATED								

Project Design Criteria & Mitigations:

Swauk Pine Project EA

Implementation Project: Swauk Pine Timber Sale

Design Criteria & Mitigation are from the DN, with edits to shorten and eliminate duplication. This tracker is kept for each implementation project associated with the NEPA. It is kept in implementation files (pre-sale folder, prescription folders, burn plan folder, timber sale admin notes, and restoration design folders). It is available for discussion at implementation coordination meetings and reviews with IDT members. The appropriate method that needs to address each item has a checkmark in the box. Items to be specially noted in Notes to Sale Administrator/CO/Inspectors are designated with (*). All implementation documentation is filed: ***PINYON\CLE-SwaukPine2018\Implementation***

	Design/Mitigation	Applicable Units	Method Addressed			
			Layout	Contract	TS Admin or CO	Specialist
BOTANY	All standard timber sale contract provisions for erosion control and revegetation would apply. Timing and inspection would be administered by timber sale administrator.	All		CT6.6#		
	Locally adapted native plant material or seeds are the first choice in revegetation or restoration where timely regeneration is not likely to occur. Under no circumstances will non-native invasive plant species be used for revegetation purposes (FSM 2070, 2008, USDA Forest Service 2005, and ROD Standard 13).	All		CT6.6#		
	Certified Weed-free plant materials and mulch would be used for revegetation and site stabilization when needed (USDA Forest Service 2005, ROD Standard 3).	All		CT6.6#		
	Seeding and/or planting would occur at the appropriate times in the spring or fall where needed to reduce erosion, prevent weeds from re-invading, or to hasten recovery of native plant species (USDA Forest Service, 2002, BMP I-4.6, III-10.2).	All		CT6.6#		
	All gravel, fill, sand, quarry and borrow material must be inspected by the county weed board or a district weed specialist before transport or used in the project area. Infested sources are required to be treated before any use of pit material is used (USDA Forest Service 2005, ROD Standard 7).	Quarries/road work			X	X

	Design/Mitigation	Applicable Units	Method Addressed			
			Layout	Contract	TS Admin or CO	Specialist
	The time between completion of an activity and rehabilitation of a site would be minimized by: (1) open and timely communication between all departments involved in creating and restoring disturbed areas, (2) requiring seeding to be completed within a reasonable amount of time prior to the activity completion and within the correct seeding time frame (3) monitoring disturbed areas for compliance (USDA Forest Service, 2002, BMP I-4.7, III-10.2).				X	X
	Revegetation efforts would be monitored and evaluated by district botanist (USDA Forest Service, 2002, BMP I-4.9, III-10.2; Standard 12).					X
	Road brushing would be avoided on heavily weeded roads once seed has set (USDA Forest Service 2005, ROD Standard 8).			X		X
	Road maintenance activities would be coordinated with invasive plant treatment (hand pulling, mowing, herbicide application, planting) to maximize efficacy (USDA Forest Service, 2002, BMP III-9.1; Standard 8).			X		X
	Application of herbicides to treat invasive plants will be performed or directly supervised by a State or Federally licensed applicator. An herbicide transportation and handling safety plan will be developed prior to application of herbicides (USDA Forest Service 2005, ROD Standard 15).					X
	Prior to implementation of herbicide treatment the Forest Service system staff will ensure timely public notification. Signs will be posted in treatment areas to inform the public and forest workers of herbicide application dates and herbicides used. If requested, individuals will be notified in advance of spray dates (USDA Forest Service 2005, ROD Standard 23).					X
	Use only adjuvants (e.g. surfactants, dyes) and inert ingredients reviewed in Forest Service hazard and risk assessment documents such as SERA, 1997a, 1997b; Bakke 2002 (USDA Forest Service 2005, ROD, Standard 18).					X
	To reduce or eliminate direct or indirect negative effects to non-target plants, terrestrial animals, water quality and aquatic biota (including amphibians) from the application of herbicide, use site-specific soil characteristics, proximity to surface water and local water table depth to determine herbicide formulation, size of buffers needed, if any, and application method and timing. Only consider those herbicides and herbicide mixtures registered for aquatic use when evaluating herbicide use near streams or surface water (USDA Forest Service 2005, ROD Standard 19).					X
	Only Animal and Plant Health Inspection Service (APHIS) and State approved biological agents will be used for biological control. Agents that have a direct negative impact on non-target organisms will not be released (Standard 14).					X

	Design/Mitigation	Applicable Units	Method Addressed			
			Layout	Contract	TS Admin or CO	Specialist
	Skidtrails, temp roads and landings will be revegetated with locally adapted native vegetation or covered in weed free woody mulch material if vegetation loss has occurred and bare soil is present (USDA Forest Service 2005, ROD Standard 13 and Standard 3).			**CT6.6#**		
	A one tree length equipment exclusion buffer will be provided around all known rare plant sites.		X			
	At least 60% canopy closure will be retained around known Cypripedium sites (a species of concern).		X			
SOILS	Summer ground-based yarding will occur when soils are dry (soil moisture is near or below the permanent wilting point); timber sale administrators will be on sight to ensure operating conditions are appropriately followed.	Summer Ground Based Units		CT6.42#	X	
	Existing skid trails will be used to the extent feasible in ground-based units.	Summer Ground Based Units		CT6.42#	X	
	De-compact, re-seed, and slash the entrance to skid trails (first 100 feet), and access to skid trails from landings, to limit illegal OHV access. Scarification or excavator de-compaction will be employed.	Summer Ground Based Units		CT6.6#		
	Corridors and landings will have erosion control treatments following logging and site prep activities. Treatments included in the timber sale contract would include construction of water bars and placing of slash on bare soils in the corridors and landings where deemed necessary by the timber sale administrator.	Skyline Units		CT6.6#		
	Groundcover recovery would be achieved with needle cast and vegetation re-growth.	Skyline Units				
	Rehabilitation activities on new temporary road construction would include re-contouring, slashing, and seeding.	Temp Roads		CT6.6#		
	Unauthorized roads used for timber haul will be stabilized by removing drainage structures, ripping, seeding, and fertilizing the roadbed, and closing the entrance to these roads.	Temp Roads		CT6.6#		
	Pile sizes will average 6-8 feet in diameter so localized areas of soil disturbances will be less than about 50 square feet in size.	Hand-piling		CT6.74#		
	Pile burning should occur during moist conditions to minimize duff consumption and high severity burn impacts on soils.	Hand-piling				X

	Design/Mitigation	Applicable Units	Method Addressed			
			Layout	Contract	TS Admin or CO	Specialist
	Where feasible, pile and burn slash where detrimental soil disturbance already exists, such as on old log landings, skid trails, and roads associated with the past harvest units. By piling and burning thinning slash in areas where soil disturbance currently exists, no new areas of detrimental soil disturbance would result from proposed actions.	Hand-piling				X
	Upon completion of prescribed fire or maintenance burning, at least 70 percent ground cover is necessary to prevent detrimental accelerated erosion and loss of soil productivity. In those cases where ground cover is less than 70 percent prior to burning, consumption and loss of ground cover should not exceed 15 percent. Ground cover includes duff, organic soil horizons, vegetation, fine woody debris, coarse woody material (CWM), and surface coarse fragments. Fire prescriptions will be designed to meet these soil protection requirements.	Prescribed Fire				X
	Course woody material (CWM) larger than 15 inches in diameter will not be intentionally ignited during hand lighting operations. However, once hand crews light the fire, the fire may burn into large CWM and combust various pieces.	Prescribed Fire				X
	Allow time for nutrients to leach from slash prior to burning. The slash will be left through one winter after cutting to allow for initial decomposition and nutrient leaching.	Prescribed Fire				X
HYDROLOGY/FISHERIES	Road alignments should be located to minimize disturbance to wetlands, disruption of unconfined streamflow and groundwater emergence and recharge.	Road Construction Road Reconstruction		BT5.2		
	New or reconstructed road segments originating from existing roads within Riparian Reserves should not exceed a 10% slope gradient within the first 200 ft. of the road segment in order to avoid or minimize the risk of concentrating and channeling runoff and sediment down road surfaces and into streams.	Road Construction Road Reconstruction		BT5.2		
	Cross-drain road surfaces through a vegetative filter strip prior to road approach reaching stream crossing structure.	Road Construction Road Reconstruction				
	All temporary roads would be decommissioned under the timber sale contract by the purchaser, to a standard which prevents use by all motorized vehicles including OHVs and effectively returns the road to a stable hydrologic state.	Road Construction Road Reconstruction		CT6.6#		
	Appropriate erosion control measures such as: seasonal closures, gravelling, maintenance, ditching water routing structures, sediment traps, water bars, and drivable dips would be employed to minimize erosion. Route water off road prisms and fills, and disperse across a vegetated slope.	Roads		CT5.31#		
	Cross drain and dich cleanout would be used to remove sediment, debris, and other blockages which impede surface water routing.	Roads		CT5.13#		
	Road edge berms would not be left after cleanout. Mechanized cross drain and ditch cleanout would not occur within 25 feet of stream channels or crossings.	Roads		CT5.13#		

	Design/Mitigation	Applicable Units	Method Addressed			
			Layout	Contract	TS Admin or CO	Specialist
	Avoid cutting the toe of cut slopes when grading roads or pulling ditches.	Roads		CT5.13#		
	Water drafting sites for dust abatement and road compacting would be identified by a fish biologist and/or hydrologist to avoid adverse dewatering effects to fish. Water drafting/pumping would maintain a continuous surface flow of the stream without altering the original wetted width. Any draft suction hose used in fish-bearing waters would be equipped with a screen of 3/32 inch mesh or less and would have an intake flow of less than 1 cubic foot/second to prevent entraining juvenile fish.	Roads		MAP		X
	Landing locations on roads within Riparian Reserves would not encroach into the Riparian Reserve and would be constructed into the treatment unit. A native vegetation filter strip or concentrations of logging slash would surround the perimeter of all landings located within Riparian Reserves to serve as a sediment trap. Objectives for landing construction include maintaining the existing mature conifer and hardwood overstory to maintain riparian shade within the reserve (also consider location of slash piles for retention of overstory canopy).	Landings	X		X	
	Landings would be located in upland portions of the reserves, on flat terrain when possible, and disconnected from surface or groundwater flow paths. Landing construction locations would avoid seeps, springs and wetlands, as well as draws and ephemeral channels.	Landings	X		X	
HYDROLOGY/FISHERIES	The size of new landings in the riparian zone would be what is the minimal needed to log while best protecting riparian soils and tree retention.	Landings	X		X	
	Post-logging soil scarification and reseeding would be done on landings to restore infiltration and ground cover on all compacted soils.	Landings		CT6.6#		
	Avoid downhill yarding and skidtrail layout converging into Riparian Reserves, particularly where skidtrails converge onto a road surface within the reserve. This action increases the risk of capturing and concentrating overland flow and storm runoff and delivering it to streams, which affect peak flows downstream.	Felling/Yarding		CT6.42#		
	Designate skidtrails at a minimum of 100 foot spacing to minimize risk of overland flow.	Felling/Yarding		CT6.42#		
	Directional felling and designated skidtrails and skyline yarding corridors would be established within the treatment portions of Riparian Reserves.	Felling Yarding		CT6.42#		
	Skidding and yarding would not occur across the no treatment areas of Riparian Reserves.	Felling/Yarding		CT6.42#		
	Avoid downhill yarding onto roads located in Riparian Reserves using either ground or skyline yarding systems in order to prevent soil movement into Riparian Reserves.	Felling/Yarding		CT6.42#		
	Install waterbars on corridors when necessary, upon completion of yarding operations.	Felling/Yarding		CT6.6#		

	Design/Mitigation	Applicable Units	Method Addressed			
			Layout	Contract	TS Admin or CO	Specialist
	Project design criteria for road decommissioning, culvert removal/replacements, in-stream channel work, large wood placement, and dispersed campsite modifications are from the Programmatic Biological Assessment for Fish Habitat Restoration Activities Affecting ESA-Listed Animal and Plant Species and their designated or proposed Critical Habitat and Designated Essential Fish Habitat under MSA found in Oregon, Washington and portions of California, Idaho and Nevada (USFS/USDI/BIA 2013).	Restoration Projects				
	All provisions and standards in the Memorandum of Understanding between Washington State Dept. of Fish and Wildlife and USDA Forest Service, Pacific Northwest Region (USFS and WDFW 2012) will be followed.	Restoration Projects				
	All conditions and requirements within the U.S. Forest Service Aquatic Restoration Program regional general permit (RGP-8) (USACE 2011) will be met.	Restoration Projects				
	All design criteria and conservation measures in the 2013-2017 Programmatic Biological and Conference Opinions (BiOps) for Aquatic Restoration Activities in Oregon, Washington and portions of California, Idaho and Nevada will be met (NMFS 2013 and USFWS 2013).	Restoration Projects				
	All work that would be conducted within the wetted channel would occur during established in-water work windows. Flood plain work or work outside of the channel may occur at any time of the year; however, seasonal operating restrictions would apply to operation of chainsaws and heavy equipment.	LWD Placement				
	Tree removal within the Reserve would be done in a manner which protects existing shade over water and prevents any increase in maximum water temperatures due to canopy removal. Additionally, no tree removal would be done in a manner which would reduce stream bank stability.	LWD Placement				
	For tree removal in upland areas: when safety allows, retain-all standing trees and snags exhibiting cavities, hollow structure or dwarf mistletoe brooms. Retain all hardwood trees. Retain the largest available trees for large tree retention, and do not remove trees >25" DBH, unless they are surplus to the large tree retention need. Remove trees 20" DBH to 24" DBH only if they are not needed to meet large tree retention objectives.	LWD Placement				
	Do not remove trees or operate equipment within falling radius of standing snags.					
	To avoid adverse effects to MCR steelhead, application of herbicides would not occur within 50 feet of Williams Creek between late June and early August when there is a high probability of juveniles occupying stream margin habitat where potential drift from herbicide application would not dissipate from the low flow and low stream mixing stream margin habitat.			CT6.315#		
WILDLIFE	Operation of tracked machinery, heavy equipment, and chainsaws within ¼ mile of active raptor or spotted owl nests will be seasonally restricted, unless field surveys indicate that birds are not nesting. In the absence of surveys, or if birds are nesting, there will be no operation of equipment between March 1 and August 31.	All				
	Operation of helicopters within 0.6 mile of known raptor or spotted owl nests will be seasonally restricted, unless field surveys indicate that birds are not nesting. In the absence of surveys, or if birds are nesting, there will be no operation of equipment between March 1 and August 31.	Entire Project Area				

	Design/Mitigation	Applicable Units	Method Addressed			
			Layout	Contract	TS Admin or CO	Specialist
	Spring burning operations within 0.6 mile of active spotted owl nests will not result in smoke accumulation in core nesting areas. Burning conditions must be such that smoke trajectories will not fall within 45 degrees of active nests. A test fire will be lit to verify smoke trajectory.	Entire Project Area	X			
	No more than 25% of any sixth field watershed will be treated with prescribed fire in a single year.	Entire Project Area	X			
	Operations shall be limited to either Lion Gulch or Cougar Gulch between May 15 and July 15 for the mule deer and elk fawning/calving period.	Entire Project Area				
	Currently there are no known wolf den or rendezvous sites in the Project Area. If either is located, reinitiate consultation with the U.S. Fish and Wildlife Service to determine appropriate response.	Entire Project Area				
HERITAGE	All sites found (through consultation with the State Historic Preservation Office) to be eligible for protection under the National Historic Protection Act will be protected through avoidance.	Entire Project Area	X			
ROADS	Appropriate erosion control measures such as: seasonal closures, gravelling, maintenance, ditching water routing structures, sediment traps, water bars, and drivable dips would be employed to minimize erosion. Route water off road prisms and fills, and disperse across a vegetated slope.					
	Cross drain and dich cleanout would be used to remove sediment, debris, and other blockages which impede surface water routing.					
	Road edge berms would not be left after cleanout. Mechanized cross drain and ditch cleanout would not occur within 25 feet of stream channels or crossings.					
	Avoid cutting the toe of cut slopes when grading roads or pulling ditches.					
	Water drafting sites for dust abatement and road compacting would be identified by a fish biologist and/or hydrologist to avoid adverse dewatering effects to fish. Water drafting/pumping would maintain a continuous surface flow of the stream without altering the original wetted width. Any draft suction hose used in fish-bearing waters would be equipped with a screen of 3/32 inch mesh or less and would have an intake flow of less than 1 cubic foot/second to prevent entraining juvenile fish.					
RECREATION	Winter logging may require plowing of roads used as groomed snowmobile routes. If that occurs, these roads would be closed to public use from Monday through Friday, due to safety concerns. The contractor would retain at least 2 inches of snow on plowed routes. Plowed roads would be open to public use (snowmobiling) on Saturday and Sundays.					

	Design/Mitigation	Applicable Units	Method Addressed			
			Layout	Contract	TS Admin or CO	Specialist
RANGE	Annual operating and implementation plans for range use, invasive plant management, non-commercial thinning, prescribed burning, and riparian treatments would be coordinated annually, to reduce or avoid potential conflicts.					
	Range permittees would be notified prior to herbicide application and applicable management practices would be followed.					
	Ensure adequate access to grazing areas (using roads) in order to utilize as much of the allotment as possible and to minimize impacts to major road corridors. □ When a road is closed or decommissioned, either maintain 300 feet of space at the road beginning or provide alternative parking area for the permittee. □ When restoration work is performed (and avoidance is requested) in close proximity to authorized Key Route, an alternative route, and/or bed grounds, adequate access must be identified and provided in order to honor the ten (10) year Term grazing permit.					
	Deferment of grazing for up to two seasons would be implemented prior to and following prescribed fire and thinning treatments to encourage vigorous seedling establishment.					
SILVICULTURE	Conserve legacy trees during yarding and underburning. Locate yarding corridors around legacy trees where possible. Avoid stacking landing piles next to or on legacy trees. In stands with many legacy trees, pull back surface fuels and rake bark slough from tree bases. Use ignition patterns that pull heat away from large trees. Use summer or fall burning windows if possible in legacy tree stands, to avoid killing fine surface roots in the spring.					
	Prune out lower mistletoe in leave trees before burning to avoid individual tree torching during prescribed burning.					
	Conserve small leave tree clumps and complex patches in the ICO prescription with directional tree felling and yarding away from these areas. When lighting prescribed fire do not light under leave clumps and complex patches. If possible approve landings and skyline corridors that have the least impact on the ICO leave tree patterns.					
SCENIC RESOURCES	Changes in form, line, color and texture resulting from management activity should not be evident for more than one season in ST-1 areas and two seasons in ST-2 prescriptions areas (WNFP, page IV 205-215). Rehabilitate area to be natural appearing by earth re-contouring, removal of woody materials from site, area smoothed out and grass seeded with appropriate grass mix.					
	Mechanical evidence created along the immediate roadside of Liberty, other private property located in the rural interface and along the Lion Gulch FR 9712 loop to Cougar Gulch FR 9718 & Durst Creek FR 9705 will be rehabilitated.					
	Enhancement of large tree viewing opportunities from travel routes, Liberty and rural interface homes, by thinning and removing smaller trees around large trees.					

	Design/Mitigation	Applicable Units	Method Addressed			
			Layout	Contract	TS Admin or CO	Specialist
	Blend earth mounds and large boulders adjacent to the existing landscape for road closures, rehabilitate landings along all main roadsides.					
	Locate landings outside of seen areas or leave vegetation screening where possible. When landings are located on Forest Roads, keep them within the existing road prism and do complete cleanup of roadside when done.					
FUELS	Test fire will be conducted in the treatment portion of Riparian Reserves to confirm appropriate low intensity burning conditions prior to stand ignition.					
	Burning of landing slash piles located in Riparian Reserves would not occur until the soil decompaction work is completed at the landing and on temporary roads to protect the intended function of the piles as sediment traps for runoff from landings.					
	Slash would not be piled, concentrated, or burned within the no treatment portions of the Riparian Reserves.					
	Firelines would have waterbars (ditches or dips built into the fireline, not berms) constructed to divert surface water off of the line and onto vegetative surfaces. Waterbars would be constructed at the time of fireline construction.					
	Hand firelines may need to be constructed within 100 feet or one site potential tree length from streams to tie in suppression needs with anchor points; wherever possible fireline within 100 feet or one site potential tree from streams will be avoided. No handline would be constructed within inner gorges of stream channels.					
	Hand firelines may need to be constructed within 100 feet or one site potential tree length from streams to tie in suppression needs with anchor points; wherever possible fireline within 100 feet or one site potential tree from streams will be avoided. No handline would be constructed within inner gorges of stream channels.					
	Fireline would be rehabilitated using methods that prevent public use as hiking trails, bike routes, motorcycle routes, etc.					

	Design/Mitigation	Applicable Units	Method Addressed			
			Layout	Contract	TS Admin or CO	Specialist
	Design fire prescriptions to not exceed a severity rating of low for 90% of the no treatment area of Riparian Reserves, with no more than 10% of the no treatment area in a moderate severity rating. Fire severity ratings are as follows: a. Low Fire Severity: Low soil heating, or light ground char, occurs where litter is scorched, charred, or consumed, but the duff is left largely intact, although it can be charred on the surface. Woody debris accumulation is partially consumed or charred. Mineral soil is not changed. Fire severity in forest ecosystems is low if the litter and duff layers are scorched but not altered over the entire depth. b. Moderate Fire Severity: Moderate soil heating, or moderate ground char, occurs where the litter on forest sites is consumed and the duff is deeply charred or consumed, but the underlying mineral soil surface is not visibly altered. Light colored ash is present. Woody debris is mostly consumed, except for logs, which are deeply charred. c. High Fire Severity: High soil heating, or deep ground char, occurs where the duff is completely consumed and the top of the mineral soil is visibly reddish or orange on severely burned sites. Color of soil below one cm is darker or charred from organic material. The char layer can extend to a depth of 10cm or more. Logs can be consumed or deeply charred, and deep ground char can occur under slash concentrations or burned-out logs. Soil textures in the surface layers is changed and fusion evidenced by clinkers can be observed locally.					
	Locate re-fueling and fuel storage areas outside of Riparian Reserves or on a road, away from water and drainage areas, in locations where the largest possible spill can be contained before entering water. In the event of a fuel spill during a burn project the Forest Hazardous Materials Coordinator would be contacted to coordinate clean up.					
	The use of pumps would not involve any streambed alteration, and pump chances would not pose any barrier to fish movement. Intake screens would be used on all pumps. Fuel would be located in containment basins and hazard materials spill kits would be available for spill containment.					
	No surfactants or foams would be used within 100 feet of the edge of wetted channels or wetlands. Engines which have had surfactant would not draft from fish-bearing waters. The deployment of hose will not require any ground disturbance, and in many cases the use of hose for wetline could reduce the need for hand fireline construction.					
	Pump locations would be identified by a fish biologist and/or hydrologist to avoid adverse dewatering effects to fish. Coordination of pump locations will occur with resource specialists. Water drafting/pumping would maintain a continuous surface flow of the stream without altering the original wetted width. Any draft suction hose used in fish-bearing waters would be equipped with a screen of 3/32 inch mesh or less and would have an intake flow of less than 1 cubic foot/second to prevent entraining juvenile fish.					